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This is an alphabetical index of articles and discussions arranged by leading words. It contains occasional cross references. Names of authors and men who discussed the papers are also included. Details of society proceedings, including the titles of papers read,

officers elected, etc., can be located in proceedings under Societies, Editorials, News of the State, Marriages, Deaths. The subjects of editorials also appear alphabetically and are marked (E).

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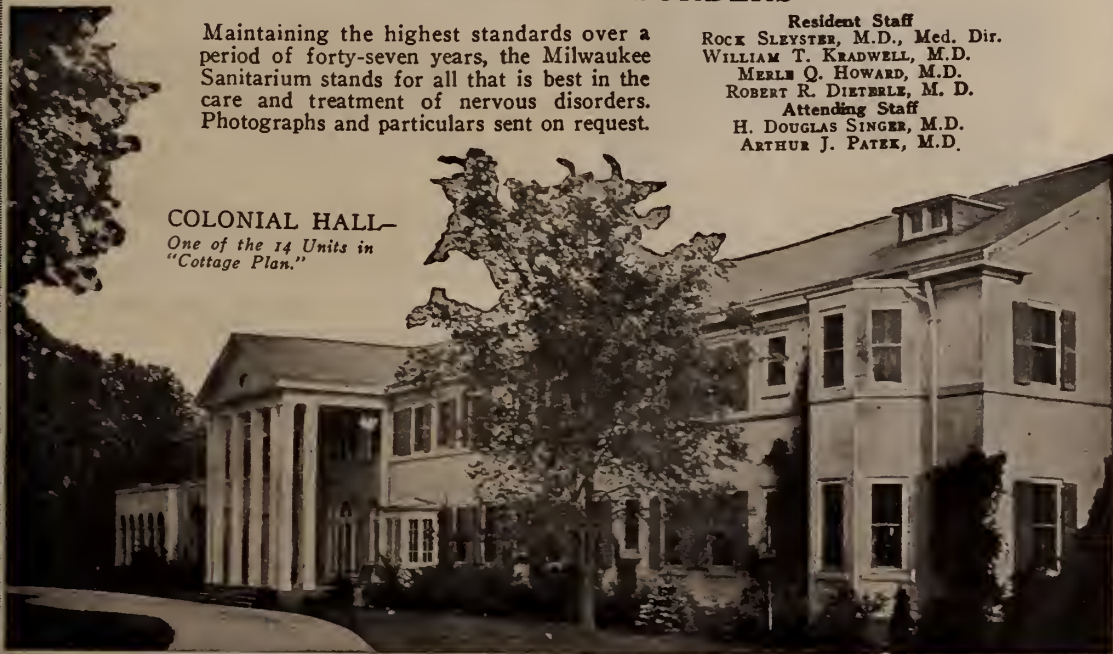
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Editorials

SUPREME COURT SAYS THAT IN ILLINOIS CORPORATIONS CANNOT PRACTICE LAW. WHY NOT A SIMILAR RULING RELATIVE TO CORPORATIONS PRACTICING MEDICINE?

The Illinois Supreme Court has handed down a ruling that banks and trust companies or corporations in general have no right to practice law. It would seem logical that some such decision should apply to corporations practicing medicine.

Why would not a proper interpretation of the present Illinois state law mean a similar decision in regard to the practice of medicine by corporations?

The first step to such an achievement would seem to call for the various societies of organized medicine to institute proceedings in some species of such test case such as was done in this instance by the Chicago Bar Association and the Illinois State Bar Association. The defendant in this instance was a bank and trust company that had employed attorneys who furnished legal services to the bank's customers—a common and growing practice. The ruling of the supreme court forbids this practice and in this instance assessed a fine.

The Illinois law forbids the practice of medicine by "any person," unless that person has a special license to so do. A corporation is "a person." A corporation cannot pass the medical examining board. The right to practice medicine attaches to the individual and dies with him. If our interpretation of the Illinois law is correct then the Illinois Medical Practice Act forbids the practice of medicine by a corporation. Perhaps we have in our present Illinois legal restrictions sufficient authority to prevent the encroachment on the medical profession by corporations attempting to engage in the practice of medicine.

What happened to set the machinery working

against corporations practicing law was the getting down to business by the Chicago Bar Association and the Illinois State Bar Association. The following article printed under date of Friday, June 19, in the *Chicago Tribune* states concisely what occurred:

SUPREME COURT PROHIBITS LEGAL ADVICE BY BANK

ILLINOIS RULING ALSO HITS CORPORATION PRACTICE

Banks and trust companies have no right to engage in the practice of law, the Illinois Supreme court ruled recently. The high court assessed a fine of \$1,000 against the Peoples Stock Yards State bank, now known as the Peoples National Bank and Trust company, for employing attorneys who furnished legal services to the bank's customers.

The ruling has been awaited with interest by all lawyers. It was regarded as a prohibition to the growing practice of corporations engaging in legal practice.

BAR ASSOCIATIONS BRING SUIT

The Chicago Bar Association was joined by the Illinois State Bar Association in proceedings against the bank. Their petition asked that the bank be cited and forbidden to collect fees for legal services performed by its attorneys and that all other banks be similarly enjoined.

The original information in the case, filed in 1928, was referred by the Supreme Court to Thomas J. Holmes, master in chancery of the Superior Court, to hear as a commissioner. Evidence was offered to show that, although the bank abandoned its legal department in 1927, it had continued to give advice and perform services through its attorneys to its customers.

BARS MANY ACTIVITIES

The question involved in the contempt proceedings was whether the bank was violating the rule against banks engaging in legal practice by furnishing this legal service. The Supreme Court judges held that the practice of law was not confined to appearances in court and that the service amounted to unauthorized practice of the law.

The ruling bars banks and all corporations from giving legal advice, acting as attorney for executors and administrators, handling real estate transactions, examining abstracts of real estate titles, preparing wills and conducting foreclosure proceedings.

Other states have laws similar to the Illinois statute regarding practice of medicine by corporations and have made decisions analogous to that handed down by the Illinois Supreme Court in regard to the practice of law by corporations. For instance, in the State of California it was very recently decided that a corporation cannot practice medicine (*People of the State of California vs. The Medical Service Corporation*)

published in full in the December, 1930, issue of this JOURNAL.

People ex rel Lederman v. Warden of City Prison, 152 N. Y. Supp. 977; *Godfrey v. Medical Society of New York County*, 164 N. Y. Supp. 846.

The Supreme Court of Colorado has held, too, that a corporation cannot practice dentistry (*People v. Painless Parker Dentists*, 275 P. 938.)

To the same effect, in so far as relates to dentistry, is the *Kansas* case (*Winslow v. State Board of Dental Examiners*, 223 P. 308).

A similar holding is to be found in *Pennsylvania* (Com. ex rel Attorney General v. Alba Dentist Co., 13 Pa. D. R. 432).

Decision of the Supreme Court of the State of New York in regard to corporations practicing medicine were detailed at length in this periodical under date of January, 1931. We refer to the details of the conviction of the John H. Woodbury dermatological institute for advertising to unlawfully practice medicine.

As predicted in this journal for the last twenty-five years, the ethical professions, such as medicine and law, are finding themselves chafed by the interference of lay dictation. The church has wrestled with this problem for years and it is now become the moot question of churches. Both church and law, however, seem to be far cannier in regard to the preservation of their rights, and in consequence the protection of the rights of their clients and the public welfare in general than does the medical profession. It would be well for medicine to take a leaf out of the books of lawyers as well as out of the books of law.

What would the corporations practicing medicine do if they should find themselves confronted suddenly with the conditions emanating from the ruling handed down by the Illinois Supreme Court and affecting the practice of law by corporations?

Quoting again from the *Chicago Tribune*, let these conditions be epitomized in this paragraph:

LEGAL AID

The tendency of banks and trust companies to make legal advice and assistance available to customers is resisted by the bar, and the Supreme Court has fined a south side bank for this practice. Chapter 32 of the Illinois statutes, section 412-5, prohibits corporations from practicing law, soliciting claims or furnishing

advice. Every corporation may employ lawyers in its own immediate affairs, "but no corporation shall be permitted to render any service which cannot lawfully be rendered by a person not admitted to practice nor to solicit directly or indirectly professional employment for a lawyer."

The profession is to be congratulated on its new allies—the lawyers. The specter of state medicine becomes a fleshly ghost when the individual is put into contact with its workings.

Says the *Delaware State Medical Journal*:

THE LAWYERS: OUR NEW ALLIES

We have, from time to time, called attention to the multitudinous and insidious encroachments upon the rights and privileges of the medical profession by various corporations, and we have almost continually held up to our readers the spectre of state medicine in one form or other.

It has hitherto appeared that the doctors were waging a lone fight against the entrenched wealth and power of the corporations involved. But succor has recently come from two quarters: (1) The decision of the Supreme Court of California, to the effect that corporation physicians cannot interfere with the rights of private practitioners in California (see October issue); and (2) the Philadelphia Bar Association finds and declares against, the practices of certain financial corporations in particular legal matters.

Anent this latter phase of the so-called "corporation question" the following editorial from the *Wilmington Every Evening* of October 10, 1930, is quite apropos:

LAWYERS TO FIGHT TRUST COMPANIES

"The Philadelphia Bar Association has inaugurated warfare on trust companies and banks which they claim are 'illegally practicing law and unethically encroaching upon lawyers' rights and fees.' After the custom was roundly denounced at a recent meeting of protest a committee was suggested as a means of focusing action on the abuse, in the hope of having trust companies and banks confine their operations to such matters as are defined by their titles.

"Philadelphia attorneys are suffering, like those of almost all other communities, from a rivalry that is depriving them of a profitable branch of their practice, and they find their fees gradually diminishing until, in many instances, they have almost reached the irreducible minimum.

"Lawyers, however, are undergoing the same trying experience that has come to most other professions or vocations. As the chain store is accused of closing many individual rivals, so the trust companies are declared guilty of closing to attorneys one of the main sources for obtaining a livelihood. There can be no doubt but trust companies are getting the lion's share of the business pertaining to the settlement of estates. But what can the lawyers do about it? Collection agencies were likewise denounced as being rivals to young attorneys who formerly found them a source of revenue by which they climbed to other heights in the profession.

"The tenor of the speeches in denunciation of the institutions named, and the prominence of the lawyers who lead the attacks upon the 'illegal practices of banks and trust companies' indicate that the association is in earnest and has drafted its biggest guns into the fight."

As an evidence of the trend of the present times, at least, as exemplified by certain corporations, we cite below the disgusting, almost revolting, questionnaire sent by one of the largest banks in the country to its employees, most of whom certainly must be fairly decent, with the average conception of American privacy and independence. And yet, in these days of economic stress, with a job at stake that feeds and clothes the wife and kiddies, we fear very few, if any, of this company's employees had the intestinal fortitude to refuse to answer such an un-American document, which was reported by the *Baltimore Sun* of November 3, 1930, as follows:

N. Y. BANK QUIZZES ITS EMPLOYEES ON THEIR MOST PERSONAL AFFAIRS

QUESTIONNAIRE, CONTAINING 130 ITEMS, INCLUDES SUCH QUERIES AS "IS YOUR MARRIED LIFE HARMONIOUS? IF NOT, EXPLAIN CIRCUMSTANCES"

(*New York Bureau of The Sun*)

New York, Nov. 2.—A searching analysis into the most personal affairs of its employees, even to the asking of such questions as: "Is your married life harmonious? If not, explain circumstances," and "Are your parents living? If so, are they living together?" has just been undertaken by the Chemical Bank and Trust Company of this city.

Items in the questionnaire which all employees were required to fill out include the following. There are 130 questions altogether.

Who is your dentist? Address.

Do you own an automobile? Make, year, cost. Did you purchase it for cash or on installment basis? Is it fully paid for? If not, how much is still owing? How much garage rent do you pay?

What is your religious faith? What is the name of your pastor, priest, rabbi?

Do you own your home? Describe house and state original cost.

Who holds first mortgage? Who holds second mortgage?

Do you live with your parents? What board do you pay?

Give names, addresses and relationship and ages of persons dependent on you for support, stating amount you contribute to each.

Do you owe any money to relative, friend or acquaintance? If so, give details as follows: Owing to, amount, since due, security.

Give history of any partial payment contracts you are party to.

The questions about married life and parents head this list.

Officials of the bank explained the questionnaire was

the result of the bank's desire "to be helpful in every possible way to our employees."

We, personally, are not victims of "corporophobia," but we conceive it to be our duty to hold before our medical brethren these horrible examples of misused power, since they are symptomatic of the changing conditions we as a profession are now forced to face. As we have said before, and cannot say too often or too forcefully, our rights of private practice are gradually being usurped, chiefly by corporations and foundations, and unless ways and means can be found to stem the tide the private practitioner of medicine will ultimately become an extinct species.

Note and comment:

In Illinois, in 1923, 1925, 1927 and 1929 at each session of the legislature, we introduced bills to prohibit the practice of medicine by corporations in this State. At each attempt we were beaten because of the influence brought to bear by a certain corporation that has been engaged for several years in the practice of medicine in the State:

In Illinois statutes prohibit corporations from practicing law, yet the lawmakers of the State seemed unwilling to give to the medical profession similar protection granted the legal fraternity.

A HOSPITAL IS SOMETHING MORE THAN A HOTEL. THE CHARGES OFTEN HEARD NOWADAYS THAT HOSPITAL SERVICE COSTS TOO MUCH. LET US SEE

In contrast to hundreds of articles derogatory to the medical profession that are appearing regularly in national, weekly and monthly magazines and journals, it is refreshing to read a constructive article in defense of the medical profession which appeared in the *Saturday Evening Post* under date of May 16, 1931. It is signed by Dr. Winford H. Smith, director of Johns Hopkins hospital.

An idea of the trenchant, competent fashion in which Dr. Smith epitomizes the charity and hospital situation in this country may be gained from a few paragraphs of the article. We quote:

"I find myself wondering if the extension of universal medical service to workers and their families is not an efficient means discovered by capital, or rather by management to keep medical costs from spreading themselves uncontrolled onto the costs of labor."

COMMUNITY CHESTS FOR HEALTH

DR. WINFORD H. SMITH
Director of Johns Hopkins Hospital

If that is true, then a tremendous force has set itself at the task of correcting whatever is wrong about the

costs of medical care. That force is the industrial wealth of the United States. There are, of course, other sound motives besides altruism and the direct labor costs involved. There is, for example, the cost to business involved in the loss of the services of skilled employes through illness that is largely preventable. I applaud these motives, but what we are talking about is a thing quite different from the personal service and personal relationship characteristic of the old-fashioned spirit of medical practice. In expressing my own feeling about this trend I have to confess to a prejudice. I feel as one of the two black crows—Moran and Mack—who sometimes says of the other's musical performance on a bazoo, "Even if it was good I wouldn't like it."

However, a question raised in an attempt to evaluate the medical service of that corporation I have mentioned interests me a great deal. It is this: "Would it be possible to procure the financial support required by organized medical service under other sponsorship than that of a large business corporation—whose primary concern is not medical care? Could a budget of \$800,000 or \$900,000 per annum be raised by a community of 30,000 or 40,000 individuals through a mutual insurance scheme, through taxation, or through some sort of community-chest program?"

The protean character of the problem with which we are trying to deal is nowhere better illustrated than in the hospitals of the United States. In the lifetime of a man fifty-eight years old the number of hospitals in the country has increased from 149 to more than 7,000. The charge is often heard nowadays that hospital service costs too much. Let us see.

Our institution was crowded to capacity not long ago, so that there was literally not a vacant bed into which to place an eighteen-year-old boy who was brought in suffering from a virulent infection of the eyes. He was a state case. The state would pay for his care eighty-five cents a day, no more and no less. But there was something more at stake than a hospital budget. The stake was the eyesight of a youth just coming into manhood.

FALSE STANDARDS OF COMPARISON

A bed was set up for him in a small sun room. A small matter. The boy, we knew, would eat three meals a day, but actually his three meals meant nine meals, because there are two hospital employes for every patient. But our institution is something more than a hotel. If we had merely left the boy to lie in a bed and be fed at intervals, he would be blind this minute. As it happened, the physician who handled his case knew at once that the only way to save the lad's sight was to keep applications on his eyes constantly. Student nurses? We had no right to subject them to such danger. Two registered nurses at six dollars a day each were assigned to care for him. These applications had to be renewed day and night, else the boy would become blind. Naturally, there were other costs—some of them invisible—but I think I have made my point. The state

might pay us eighty-five cents a day if the case were considered worthy of state aid.

"Ah, yes," you say, "but what has that got to do with the \$900,000,000 that hospitals are spending every year?"

It has a great deal to do with it. About 40 per cent of all the work done in hospitals in this country is free to the patients. In New York City the thirty general hospitals participating in the proceeds of the United Hospital Fund provided, during 1929, a service which is measured as 2,532,000 days of treatment; 44.2 per cent. of that treatment was free.

If a hospital were merely a factory striving to produce a standardized product to be sold at a profit, it would not give free service any more than Detroit factories give away automobiles. Hospital management is constantly subjected to comparison with that which is not comparable. Are hotels expected to feed the hungry? Do railroads and street car lines transport the poor and unemployed free of charge? Do department stores supply clothing to these people without cost? Certainly not. No one expects them to; but hospitals are expected to assume the burden, on the theory that the public supports them. It would be fine if this were true.

Even if free work is eliminated, hospital costs are high, but this is not an indictment of the management, generally speaking. The most closely knit organization of any hospital of which I know is that established several years ago in Detroit by Henry Ford. If there is a person in the world more capable of achieving low costs than Henry Ford I cannot think who it might be. Mr. Ford organized his hospital and mapped out its policies, scrapping a lot of tradition in doing so. All physicians and surgeons connected with it are on a salary. All other personnel is well paid—far better paid than in most hospitals. Therefore, it is to be assumed that the institution is getting efficient service from its employees. All professional fees go to the hospital. If a surgeon performs one operation or a dozen in a day, he gets his salary and the hospital gets what, in other circumstances, would be his fees. It is an excellent institution, quite efficient in all its departments. Comparatively little free treatment is given. Yet this hospital of Henry Ford is not self-supporting, according to my information, nor has it succeeded in reducing hospital costs below those of the average first-class hospital of the customary type. I am not in any sense critical of Mr. Ford or the Ford Hospital. I am decidedly critical of those who recklessly assert that hospital costs reflect uniformly bad business management. I know that is not true.

MODERN FUNCTIONS OF THE HOSPITAL

Hospitals are expensive institutions to operate. Why? For the same reason that the cost of living is high, plus an increasing complexity in the service that is given. When I first became concerned in the management of hospitals we supplied three kinds of diet—hard, soft and liquid. We would be called murderers, we would be murderers, if we restricted our dietetic departments

to those limits today, because we know other diets are necessary to achieve the ends sought. We must provide many kinds of diets—cardiacs, nephritic, diabetic, high-calorie, low-calorie, salt-free, high-protein, low-protein, and so on. Does anyone suppose you can provide such a variety of menus with the assistance of an old-fashioned hired girl and a charge account at a grocer store?

The x-ray department at Johns Hopkins costs about \$50,000 a year. A hotel manager might abolish that department if it did not pay its way. I might list here a whole catalogue of costly appliances that any first-class hospital must have because its staff of physicians and surgeons say they cannot get the best results without them. The best results in what? In saving human life. As a director of a hospital, I know I dare not argue about such expenditures beyond a certain point. Someone might die because I tried to balance a budget.

Viewed in one way, hospital costs have not increased at all in the past twenty-five years. About that long ago the average abdominal-surgery case was kept in a hospital bed from twenty-six to twenty-eight days. Now the average is eleven to fourteen days. May we speak of that as a more rapid turnover? Even if the per diem rate has doubled, therefore, the hospital bill would be no greater now than it was at that period.

It was at Bellevue Hospital, in New York, that I learned the necessity of one kind of hospital service that would have been regarded as extravagance in most hospitals twenty-five years ago. Indeed, then it would have been regarded as something totally outside the field of a hospital. I am speaking now of the social-service work of a hospital. It costs money, but it is worth the cost, in the light of the changed conception of the role of the hospital in society. Its function is not merely to treat the sick; it must strive to keep people well.

One day at Bellevue a man who had walked into the dispensary for treatment died with an abruptness that was startling even in that grim atmosphere. The doctor who treated him had administered a drug to which this man was peculiarly susceptible. It was tragic, but it was not the fault of anyone. The usual way of dealing with such a situation would have been to dispatch a telegram to the man's family. Instead, we sent a social-service worker to break the news to his family. This is what she found: The wife was sick in bed. Two children were undernourished and half sick. A girl, twelve, was trying to run the household. There was no food except half a loaf of bread. Only the week before, another of the children, while playing with matches, had burned to death. I sometimes ask myself now what further tragedies might have followed there if we had sent merely a telegram concerning the death of the father. Instead, however, a well-trained social worker went into action. She sent for a representative of one of the charitable organizations. The mother and two sickly children were taken forthwith to the hospital and the twelve-year-old girl who had been running the household was placed in a home.

That is the sort of thing many hospitals try to do now as a matter of course. How can they avoid it when they know the need exists?

Some months ago, two children, eleven and nine years old, were brought to Johns Hopkins Hospital by their grandfather from their home in the mountains of Virginia. Both children were practically blind. For two years the old man had been saving up the cost of the railroad journey. He had only enough more to pay his board in the city for a week or two, and then railroad fare home.

THE PART PREVENTION PLAYS

An examination revealed that the cataracts on the children's eyes could only be dealt with by means of two or three operations, each with treatments spread over a period of six months. There was no hope for them if we merely provided the first operations and sent them back to Virginia. They had to be kept in Baltimore, or else—blindness. The social-service staff raised money enough through doctors and other friends to pay for the board of the children in a private home between operations. The hospital treatment was given free. At the end of eight or nine months they were sent back to their grandfather, one child with complete vision, the other with partial vision strong enough to read large print.

I could cite endless examples of that sort, and so could the people associated with any large modern hospital. It is service. It costs money. It is one of the reasons why hospital costs have increased. As we make advances in medical science costs probably will tend to increase. The best way to control them, in my opinion, is to control illness. If what we have been discussing may be called supply, we must also consider demand. The social service work of a hospital is an effort of that kind. It is designed to prevent illness and, where possible, dependency which breeds illness. It is likewise an economic factor at times. A member of a poor family sent to us was treated for pediculosis. The meaning of the word should be clear to a nation that has transformed the word "lousy" into a polite expletive. That case was treated and then several other members of the same family appeared at intervals. The social-service department went into action, with the result that this particular drain on the resources of our hospital was cleared up, because they found it did no good to treat one member of the family at a time. Other services are more dramatic, even more effective, but in my eyes they stand side by side with this kind of work.

UNIVERSAL TONSILLECTOMY IS NOT THE ROYAL ROAD TO HEALTH

The tribal scapegoat of the days of Abraham and the years of the Euphrates lingers on in the hearts of mankind and in the minds of some members of the medical profession through the

hope of finding some isolated basic defect by the defeat of which universal physical well-being shall emanate as living water from a mountain spring. In other words the demands of the situation are "Wanted—A Scapegoat," and then "To Be Found—A Panacea."

Looking backward the responsibility for illness has been laid at the doors of various offending and non-offending organs, members and functions. Lately the tonsil has been the target. Universal tonsillectomy is the royal road to health in the minds of far too large a number of medical men.

Tonsillectomy is an ancient operation. It dates back to at least 1000 B. C. and was a favorite with the ancient Hindus. Hardly however to the point of frequency with which it has been performed in America during the past twenty years as statistics show that one-third of all the operations performed among the American urban population are for the removal of tonsils and adenoids. There is however small if any agreement among reports or physicians as to the diseases prevented or the benefits obtained.

R. S. Cunningham reviewed recently past literature on this subject and added another series made from data about young women students in the University of California and that covered 12,000 cases. Analysis of their histories was made to compare the incidence of illness in those with no tonsils, in those with normal tonsils and in those with pathological tonsils. Writes Cunningham in part:

"The groups with normal and with pathological tonsils differed insignificantly in the incidence of the following diseases: measles, mumps, chicken pox, whooping cough, scarlet fever, diphtheria, pneumonia, pleurisy, chronic colds, rheumatism, and chorea. There was also no difference in the number of appendectomies, mastoidectomies and operations upon the cervical lymph nodes and nose. Among the young women without tonsils, there was more illness than in the group with tonsils. This is not due to the operation, of course, but occurs because the child who is often ill ultimately has his tonsils removed. Those who are most ill are most tonsillectomized. A review of the literature on the effect of the condition of the tonsils on the general health reveals a great lack of accurate information as to the effects of tonsillectomy, which is surprising when one considers the number of operations performed. There is a growing tendency to question the value of tonsillectomy as a prophylaxis against infectious diseases, or

in the prevention or cure of rheumatism, chorea, and carditis.

"If removal of the tonsils is not beneficial in these conditions, what is left?"

"No medical theory can be held sacred or unassailable. Each one must be strong enough to bear the impact of continual beating of the flood of scientific advance. Tonsillar infection has been the pillar of strength of the whole theory of focal infection, which has been called 'America's greatest gift to medical science.' Impeachment of the theory of the relationship of pathological tonsils to the symptoms of chronic disease would be an impeachment of the whole theory of focal infection. One would need simultaneously to deny the value of filling holes in decayed teeth, or of abstracting teeth with abscessed roots, or actually, of the fundamental principle of surgery, the release of pus. Obviously, there are times when tonsillectomy is beneficial. It is equally probable that a number of needless operations have been performed.

"The Journal of the American Medical Association, in commenting editorially¹ on the government report which indicated that tonsillectomy, although sometimes helpful, frequently failed to improve the condition of the patient, called attention to a report of Rhoads and Dick² that pieces of tonsillar tissue were let in situ in 73 per cent of 403 patients tonsillectomized under good conditions; and that these small tonsil tags contain more bacteria per gram than larger tonsils. If this be confirmed, all contemporary statistics will become confused and conclusions from many recent series will be questionable.

"Statistics reported have dealt chiefly with well persons, in many instances with children attending school. Fifty cases have recently been reported in the *British Medical Journal*³ of patients who had suffered from rheumatism for a long period. All but one of these, according to the statement of relatives, improved in general health after tonsillectomy.

"Tonsils have been removed in the past in the presence of any unpleasant symptom of systemic disease on the theory that they might be connected with it. The tonsil for a long time held the position of a prisoner under lynch law, guilty unless his innocence could be demonstrated beyond a doubt. Or he was like the accused witch, who was thrown into the water because if she drowned her innocence could be established. These organs should revert to the position of the ordinary prosecuted member of society, innocent in the eyes of the law until conclusive evidence against him is presented. New criteria for the conviction of the pathological tonsil are sorely needed."

1. Tonsillectomy in the United States. Ed. J. A. M. A., 91:1195, 1928.

2. Rhoads, P. S.; and Dick, G. F.: Efficacy of Tonsillectomy for Removal of Focal Infection. J. A. M. A., 91:1149, 1928.

3. Leathart, P. W.: Tonsillectomy and Rheumatism. Brit. Med. Jour., 3666, p. 627, April 11, 1931.

FRIEND OF THE STORK

The doctor of a country village had two children who were acknowledged by the inhabitants as being the prettiest little girls in the district.

While the two children were out walking one day, they happened to pass quite near two small boys; one lived in the village and the other was a visitor.

"I say," said the latter to his friend, "who are those little girls?"

"They are the doctor's children," replied the village boy. "He always keeps the best for himself."—*Montreal Star*.

A large percentage of bad accounts found on the books of doctors and hospitals—and they total millions of dollars—are those of victims of automobile accidents who have refused to pay or are unable to compensate for services rendered. Some form of protection for physicians and hospitals is long overdue.—*The Ohio State Medical Journal*.

RELATION OF SPLEEN TO JAUNDICE

From a correlation of research facts taken from the literature up to the present date, Robert Lee Payne, Norfolk, Va. (*Journal A. M. A.*, Oct. 11, 1930), concludes as follows: 1. A certain amount of red blood cell destruction takes place in the spleen. 2. A certain amount of bilirubin is formed in the spleen. 3. The amount of red blood cell destruction and bilirubin formation in the spleen is relatively small as compared with the consummation of these functions elsewhere in the body. 4. That hyperbilirubinemia associated with dysfunction of the spleen is dependent on not only the spleen but the entire hematopoietic system must be considered as an important contributing factor in evaluating the relation of the spleen to jaundice. Particularly must it be remembered that there is commonly associated a hepatitis in which failure of the liver cells to filter bile pigments represents an active rôle in the production of the jaundice.

SCURVY IN ADULTS

Nine cases of scurvy in adults were studied by Stacy R. Mettier, George R. Minot and Wilmot C. Townsend, Boston (*Journal A. M. A.*, Oct. 11, 1930), eight of which occurred in elderly males. Scurvy can be precipitated by infectious processes in individuals with certain types of chronic nutritional instability. Arteriosclerosis may favor the development of the disease. In adults with scurvy, anemia is common and often pronounced. Fruit, green vegetables and fresh liver, foods which are rich in vitamin C, can cause in these patients a prompt response of reticulocytes and rapid regeneration of blood. Neither large doses of iron nor the substance potent in pernicious anemia appear to accomplish these effects. The bone marrow in two cases of scurvy was examined microscopically, and it appears to be of the type that occurs in what is often spoken of as secondary anemia. Vitamin C apparently can have a specific effect on erythropoiesis when there has been a chronic lack of this vitamin.

ILLINOIS STATE MEDICAL SOCIETY

PROCEEDINGS OF THE HOUSE OF DELEGATES

East St. Louis, May 5-7, 1931

The first meeting of the House of Delegates of the Illinois State Medical Society was called to order at 3:08 P. M., Tuesday, May 5, 1931, by the President, Dr. W. D. Chapman.

The President: We will listen to the report of the Credentials Committee.

Dr. Charles D. Center: Your Credentials Committee has passed upon all credentials brought to the Committee and has seated every delegate presenting credentials. The downstate delegates number 53 and the Chicago delegation 44, totaling 97 delegates seated.

The President: You have heard the reading of the report, what is your pleasure.

Dr. John S. Nagel, Chicago: I move the adoption of the report and that these delegates be officially seated. (Motion seconded and carried; the Chair declared the delegates officially seated).

The President: The next order of business will be the roll-call.

The Secretary called the roll and announced that a quorum was present, 59 delegates from downstate, 43 from Chicago Medical Society, and 10 members of the Council, a total of 112.

The President: The House is duly organized for the transaction of business. We will now listen to the reading of the minutes of the last meeting.

Dr. T. P. Foley, Chicago: I move the adoption of the minutes as published in the July, 1930, issue of the ILLINOIS MEDICAL JOURNAL. (Motion seconded and carried.)

The President: We will now listen to the reports of the officers of the Illinois State Medical Society.

REPORT OF THE PRESIDENT

The report is as published in the printed list. The activities of the year's service for this Society have been profitable and very enjoyable. Your President feels that they have not been entirely without good for the Society. We hope they have been of some use to other organizations as well. One regrettable incident of the year has been the loss of one of our county societies. Your President's report makes mention of it. It

will also be detailed in the reports of the other officers for the reason that the officers felt that members of the House of Delegates would be vitally interested in this matter. If for that reason we seem to use more time than usual in these reports, the members of the House will bear with us.

Your president reports having derived both pleasure and profit from his contacts with county societies.

He recognizes, keenly, the importance of current changes of mode in the practical application of scientific knowledge; and advises that the only newness encountered for the present generation lies in the rate of change, and not in the state of need itself. He is of the opinion that, aside from a judicious control of medical education, the greatest practical need of the moment, for medical practitioners and their public, falls within the field of adaptation, entirely: an understanding of purpose, on the one hand, and an understanding of the speed of economic change, on the other. Lay appreciation of scientific truths seems more general at the present time than has been the case during any recorded period of history. On the other hand, it seems clear that the rapid rate of change in economic application has made confusion for professional practice and for some of our societies as well as for the major operations of manufacture and commerce. One component society died during the year because of the failure of its members to appreciate a proper balance between the professional, economic and emotional aspects of living.

It seems that satisfactory adjustment may better follow upon an acceptance of fact as it is and upon adaptation to situations encountered. The value of united professional action in meeting economic phases is commended and presented as worthy of deep professional thought. Disunion of force never breeds strength. Unity of action based upon truly professional thought, probably cannot be had without courageous discipline among medical organizations. Your president knows of no other force which can prevent the direction and control of medical practice being taken over by politicians who know little of medical science or of the art of its application but who are subject to pressures which they cannot control. Unity of action can only be had when our members count professional dignity and pride in work above other considerations. Therefore, the continued functioning of the small—even though it be very small—component society is regarded as of equal importance with effort looking toward proper control of wayward or business-minded members of larger component societies. The economic setting of the medical profession varies with custom and period but the professional ideal has not varied, in any major essential, in twenty centuries. Always, the test of economic change has lain in whether or not the lay mind found the professional mind worthy. The rapid economic change of the past decade does call for some continuing professional adaptiveness.

Your president has accepted the mandate of every component society making demand upon his time, with

one single exception. An instance occurred in which two county societies and a group society which included their territories all asked an appearance, with dates separated by no more than sixty days. Two appearances were filled but a substitute was nominated for the meeting of one of those county societies upon the ground that too much was more than plenty. That nomination was made for the best interests of the society and not for the physical ease of the president.

He has been honored by banquet and testimonial of professional men in his own community; has travelled to assist in the banqueting and honoring of one whose physical and moral stamina were such as to permit the endurance of more than fifty years of medical practice in Illinois. He has attended the meetings of the Council, accepted some commissions of the Educational Committee, and undertaken program requests of lay groups, otherwise. The appreciation of privilege has been great.

Contact with the Illinois State Department of Public Health has been fostered and encouraged throughout, but especially by personal participation in a conference of health officers, to the mutual satisfaction of the Director of the Department and your president. The Director was gracious, the health officers were appreciative, and the duty was a pleasure.

Continued contact for the Society with the officers of the Medical Regiment, Illinois National Guard, under Colonel McKinley, was an incident believed to entail profit for both organizations.

The Christmas party of the Medical Women's Club of Chicago effected direct contact for the society with nearly all of the female medical students in Chicago. That contact is regarded as of immense value for the reason that neophytes have a right to expect consideration and advice from professionals.

The privilege of presiding over a session of the annual meeting of the Illinois Tuberculosis Association was appreciated in view of the constructive effort of that body to cooperate in health activities. Their Constitution and By-Laws were remodelled, during the year, to conform to the wishes of medical practitioners.

The progress of organization in our Woman's Auxiliary is observed and commended. An unduly forced growth might easily have been fatal to lasting progress and it has not been permitted to occur. The building of a common interest is regarded as basic in the making and the progress of each of these units and that idea appears to have been recognized.

Especial attention is invited to the reports of two committees, in the belief that the work of the Council Committee on Education is without precedent or parallel and that the work of the House of Delegates Committee on Legislation during the past fifteen years is unequalled in the United States.

Your president has endeavored to inform himself and is of the opinion that the ILLINOIS MEDICAL JOURNAL presents a more intelligible and comprehensive panorama of current medical practice than any other publication in existence.

Appreciation is expressed for the efforts of the several section officers and of the Scientific Committee and

of the practitioners of southern Illinois, in their efforts for the success of the eighty-first annual program of the society. Especial appreciation is accorded the local Committee on Arrangements, chairman and members, who have labored for the success of this East St. Louis meeting.

That the Council should have functioned in earnest effort for the best of professionalism in Illinois and to the total disregard of politic claims or of internal jealousies or of favors demanded, is a source of the most keen satisfaction. Your president approves of the Council and its work and is thankful for Council courtesies and cooperation.

Respectfully submitted,

William D. Chapman,
President.

The President: The next order of business is the report of the Secretary.

REPORT OF THE SECRETARY

Members of the House of Delegates:

Your secretary reports the collection of the following sums for the balance of the year 1930 and the first four months of 1931, ending on April 28, 1931. The first figures representing collections made from April 1 to December 31, 1930, while the second represents collections from January 1 to April 28, 1931. On account of the annual meeting coming so early in May this year, it was necessary to close our records on April 28 so that this report could be printed in time for the meeting.

Adams .....	.....	\$ 552.00
Alexander .....	.....	152.00
Bond .....	.....	72.00
Boone	\$ 104.00	104.00
Brown	40.00	.....
Bureau	80.00	232.00
Carroll .....	.....	.....
Cass	80.00	64.00
Champaign	152.00	392.00
Chicago M. S.	7,584.00	22,928.00
Christian	240.00	.....
Crawford .....	.....	136.00
Clark	40.00	64.00
Clay	8.00	72.00
Clinton	120.00	136.00
Coles-Cumberland ..	8.00	296.00
De Kalb	152.00	256.00
DeWitt	8.00	104.00
Douglas	16.00	104.00
Dupage	248.00	288.00
Edgar	24.00	136.00
Edwards .....	.....	.....
Efingham	64.00	.....
Fayette	64.00	16.00
Ford	48.00	32.00
Franklin .....	.....	240.00
Fulton .....	.....	288.00
Gallatin .....	.....	.....
Greene	32.00	.....
Hancock	56.00	72.00
Hardin .....	.....	.....
Henry	80.00	176.00
Henderson .....	.....	40.00
Iroquois	16.00	160.00
Jackson	32.00	48.00
Jasper .....	.....	32.00
Jefferson-Hamilton ..	152.00	.....
Jersey	48.00	.....

JoDaviess	120.00	.....
Johnson .....	.....	.....
Kane	548.00	720.00
Kankakee	16.00	280.00
Kendall .....	.....	.....
Knox	192.00	.....
Lake	120.00	.....
La Salle	24.00	424.00
Lawrence	152.00	160.00
Lee	32.00	.....
Livingston	16.00	152.00
Logan	152.00	80.00
McDonough	200.00	128.00
McHenry	16.00	152.00
McLean	136.00	432.00
Macon	136.00	592.00
Macoupin	248.00	.....
Madison	128.00	464.00
Marion	144.00	168.00
Massac	96.00	.....
Mason	88.00	.....
Menard .....	.....	.....
Mercer	88.00	112.00
Monroe	56.00	56.00
Montgomery	32.00	128.00
Moultrie	56.00	.....
Morgan	168.00	72.00
Ogle	184.00	128.00
Peoria	592.00	720.00
Perry	104.00	88.00
Piatt	96.00	72.00
Pike	168.00	136.00
Pulaski .....	.....	64.00
Randolph .....	.....	144.00
Richland	88.00	.....
Rock Island	40.00	544.00
St. Clair	904.00	904.00
Sangamon	592.00	952.00
Saline .....	.....	120.00
Scott .....	.....	.....
Shelby .....	.....	80.00
Schuyler	80.00	72.00
Stark .....	.....	.....
Stephenson	64.00	336.00
Tazwell	8.00	136.00
Union	140.00	104.00
Vermillion	352.00	312.00
Wabash .....	.....	80.00
Warren	192.00	184.00
Wayne	96.00	104.00
Washington .....	.....	112.00
White .....	.....	80.00
Whiteside	16.00	208.00
Will-Grundy	72.00	512.00
Winnebago	224.00	656.00
Woodford	104.00	88.00
Williamson	216.00	56.00

Total	\$16,792.00	\$38,304.00
Subscriptions	49.50	88.50
Exhibits	1,715.00	975.00
Interest Treasurer's Account.....	612.69	150.77
Bonds	1,632.50	665.00
Journal	14,000.00	8,000.00
Medical History	687.92	.....
Refunds	30.00	.....
Total	\$35,539.61	\$48,183.27

RECEIPTS FOR THE YEAR 1930

County Societies	\$54,016.00
Exhibits	3,032.50
Subscriptions	91.50
Journal	25,200.00
Interest, all sources.....	2,999.68
Miscellaneous	717.92
Total Receipts	\$86,057.60

RECEIPTS AND PAYMENTS FROM MAY 1, 1930, TO APRIL 30, 1931, RECEIPTS

County Societies	\$55,096.00
Exhibits	2,690.00
Subscriptions	138.00
Interest—Treasurer's Account.....	763.46
Interest—Bonds	2,317.50
Journal—Advertising	22,000.00
Committee on Medical History.....	687.92
Refund	30.00
Total	\$83,722.88

DISTRIBUTION OF RECEIPTS

General Fund	\$28,871.66
Medico-Legal Fund	13,429.62
Legislative Fund	8,953.10
Journal Fund	32,468.50
Total Receipts	\$83,722.88
Cash Balance, May 1, 1930.....	57,589.78
Total	\$141,312.66

PAYMENTS

General Fund	\$27,120.44
Medico-Legal Fund	20,306.40
Legislative Fund	3,558.74
Journal Fund	26,757.76
Total Payments	\$77,743.34
Cash Balance, April 30, 1931.....	63,569.32
Total	\$141,312.66

CASH BALANCES, APRIL 30, 1931

General Fund	\$29,353.61
Medico-Legal Fund	7,854.76
Legislative Fund	10,657.68
Journal Fund	15,703.27
Total Cash Balance.....	\$ 63,569.32

Bonds are held in trust for the Society at the State Bank and Trust Company of Evanston, Illinois, totalling \$51,000.00.

The Cash Balance as reported is held by the Treasurer at the State Bank and Trust Company, Evanston, Illinois, together with the Bonds.

MEMBERS IN GOOD STANDING AS REPORTED MAY 1, 1930.....7,485

Dropped during the year:	
By Death	124
Non-payments, Removals and Expulsions.....	255 379
Reinstated during the year.....	97
New Members during the year.....	340 437
Total Membership, April 28, 1931.....	7,543

The membership of the Society varies from month to month, with new members reported each month, removals, by death, resignation, dismissal, or other causes.

During the past year, the Society has lost by death, two past-presidents, Drs. A. L. Brittin, of Athens, who was president in 1915, and H. C. Mitchell of Carbondale, president in 1906. These honored men for many years were among those whose lives and actions were for the best interests of this Society.

On account of the financial depression of the past year, the collection of dues by the component Society Secretaries has been more difficult than for a number

of years. This has naturally meant more work for these secretaries, but as a whole the work of the past year has indeed been highly satisfactory. Your Secretary wishes to once more thank the Secretaries for the splendid spirit of cooperation shown, and it is his belief that Illinois State Medical Society is most fortunate in having so many willing and efficient officials in their component Societies.

During the past year, the Council has watched the expenditures very closely, and has done everything according to its belief, for the best interests of the organization.

On December 1, 1930, the Council held a special meeting in Chicago to give serious consideration to the affairs which had existed in Knox County, and which had been aired at several preceding Council Meetings. A special Council Committee was sent to Galesburg on October 16, 1930, to see if they could aid in the settlement of these troubles, the committee going to Knox County in an absolute spirit of neutrality, and with only one desire, to investigate the troubles of that Society, and render any possible assistance. After hearing the report of this committee, consisting of 104 typewritten pages of evidence produced at the hearing in Galesburg, and taken by a court reporter the Council unanimously voted to revoke the charter of the Knox County Society, and leave Knox County physicians out of the organization until such a time as they can get together, and as a unit apply for a new charter for a component society. The Council thoroughly believes that this action was necessary at the time, for the best interests of the Illinois State Medical Society, and its component societies. This is the first time in the history of the Council that such an action has been taken, or even contemplated.

It is the belief of your Secretary that the Illinois State Medical Society is doing more work at a lower cost than any of our larger State Societies. For the first time, it is our belief that the per capita tax of this Society for the year 1932, can be safely reduced one dollar, without endangering the finances of the Society. The Educational Committee has been most economical, and although they are doing more and better work than ever before, it is not increasing the cost of operation. Our Legislative and Medico-Legal work too, means the expenditure of considerable money, but these expenses should be well cared for now, with a slightly decreased per capita tax. The Society has \$51,000.00 in bonds which pay a good rate of interest, which will help considerably in increasing our income each year. It is therefore our recommendation to this House of Delegates, that the per capita tax for 1932 be reduced to \$7.00.

A complete financial audit covering the year 1930 and first four months of 1931, has recently been made by Fred N. Setterdahl, of Rock Island, Illinois. The Certificate of Audit is attached to this report, as submitted by Mr. Setterdahl. Having watched the careful work of Mr. Setterdahl over a period of years, and having received much valuable information from him, as to methods whereby our accounting system could

be improved and likewise having made many valuable suggestions relative to constructive changes in our membership files, it is our opinion that this Society owes a debt of gratitude to Mr. Setterdahl for the interest he has shown in our work, for unlike many doing this type of work, his interest in our affairs does not cease when he is remunerated for actual work done. It is quite evident, from this report, that the Illinois State Medical Society has had another successful year, in spite of several unusual handicaps which have affected many similar organizations, and practically all branches of Industry in general.

It has been the privilege of your Secretary to visit many component Societies during the past year, and we have been particularly interested in the welfare of our smaller Societies. With our ever increasing system of hard roads, it is now possible for physicians anywhere in the State to attend distant meetings, with a minimum loss of time from work. We have always insisted that small counties can have good Societies and excellent meetings, if the meeting is properly arranged and announcements are sent to surrounding counties. One of our small Societies previously referred to, with only eight members, has had an attendance of over two hundred at their meetings, and they have no trouble in getting speakers with an international reputation to take part in their programs. Other small Societies can do the same and the Educational Committee will gladly aid in procuring speakers, sending news notices to many papers of the meeting, and the Secretary's office will also furnish as large a mailing list of physicians in the territory as is desired.

Respectfully submitted,

Harold M. Camp, M. D.,
Secretary.

FRED N. SETTERDAHL

PUBLIC ACCOUNTANT
224 Robinson Building
Rock Island, Illinois
April 30, 1931

Members of the House of Delegates,
Illinois State Medical Society:

This is to certify that I have made an audit of the following accounts of your Society:

Dr. H. M. Camp, Secretary

Dr. A. J. Markley, Treasurer

Dr. C. J. Whalen, Editor, and

Miss Jean McArthur, Secretary, Educational Committee.

for the year ended April 30, 1931, and found the accounts to be correct.

Detailed audit report has been furnished the Council.

Respectfully submitted,

Fred N. Setterdahl,
Public Accountant.

The President: The next order of business will be the report of the Chairman of the Council.

REPORT OF CHAIRMAN OF THE COUNCIL

Members of the House of Delegates:

The Illinois State Medical Society as a whole has

enjoyed a successful year, in spite of financial and other conditions which inevitably affected its members. Dues have in the main been promptly paid, and expenditures have been kept accurately to the estimates made therefor. The activities of different district and their component counties will be presented by their respective Councilors.

The Educational Committee and the Scientific Service Committee have each done excellent, and steadily increasing, work. Each has responded to hundreds of calls, and so far as we know have given entire satisfaction. This in addition to numerous radio broadcasts and replies to inquiries for information. This work altogether makes a great and valuable contribution to the education of the public as well as the rank and file of the profession in health matters; and I wish to express to all those who are helping carry it on the sincere thanks of the Society, and the public, for their able, charitable, and unselfish efforts. All the other committees as well, medico-legal, and special, have done prompt, vigorous, and thoroughly good work, and I take much pleasure in publicly saying so.

A resolution was passed by the House of Delegates last May, changing the By-Laws so that the President-Elect will be inducted into office at the close of the last meeting of the House, instead of later in the day as heretofore. That is a wise change.

Our relations with other State Departments have been entirely cordial. Dr. Hall has been present at most of the Council Meetings, and free and fair discussion of all points of contact between the State Department of Health and the State Medical Society is always possible. It is to be earnestly hoped that this situation may continue, with much benefit to both sides—and I believe it will.

On account of the steadily increasing work, and amount of documents, the secretary was furnished with an office room, fire proof safe and some steel cabinets. All were absolutely necessary.

The ILLINOIS MEDICAL JOURNAL has kept up its high place among its contemporaries. It has suffered somewhat financially by reason of loss of advertising due to financial conditions, a loss which cannot be avoided. No one knows how long this situation will last; but whatever deficit there may be should be made up by the Society and our present standard and position, and policies, be firmly maintained.

At the January meeting of the Council a proposal was received from the Adleman Company of Chicago to take over the whole matter of public relations, lay education, and similar contacts between the medical profession and the public, for approximately \$13,000 a year, of which the Chicago Medical Society would pay one-half and the State Society one-half. After mature discussion the Council declined the proposition; for the several reasons that it was admittedly an experiment, that the proposers had had no similar experience, that it could not be done at all without the very material help of the Education and Scientific Service Committees, and particularly that the present committees, after spending years of patient and un-

remitting labor in establishing their contacts and methods, were doing highly satisfactory work.

In January, 1930, the Knox County Medical Society sent a communication to the Council stating they had some difficulties, and asking that a Council Committee be sent to meet with them. Councilors Center, Coleman and Camp were appointed. This Committee met with the Knox County Society in Galesburg, in April, 1930, spent several hours with them, and discovered that the Society was divided into two factions, the point of contention being their different relations to the Galesburg Cottage Hospital and its management. Both factions were present, were told that the Council had absolutely no voice in hospital management, and were advised to unite on some plan, and then present it to the Hospital Board. This they failed to do; their own Councilor tried repeatedly to help, with no success.

In August, 1930, the Secretary of the Council received a communication from the Knox County Society, saying that the Society had decided by a majority vote to give up its charter, and in the same communication demanding that the Council issue a new charter to certain physicians in Knox County of the majority group, and not to those of the other group. This communication was presented to the Council at its regular meeting in September, 1930. Several men from Knox County were present; Dr. Stone made a lengthy presentation of the position of the majority group, and Dr. Ripley explained the position of the minority group. This matter was then thoroughly discussed by the Council, after which a motion was made and carried unanimously that a special committee of the Council be appointed by the chairman to investigate the whole Knox County situation, said committee "being given power to call witnesses, employ stenographer to take evidence and do other necessary work in connection with investigation and that every effort be made to straighten out the Knox County difficulties." Councilors Nagel, Coleman and Foley and Secretary Camp were appointed.

On October 16, 1930, this committee met at the Elk's Club in Galesburg, for a hearing, each member of the Knox County Medical Society having been notified by the Secretary of the meeting, and having been told that he could present any evidence he chose, as this committee was absolutely impartial and was going there for the sole desire to help, if possible, with their troubles. All but two of the members of the Knox County Society appeared, and also several of the non-professional members of the Hospital organization. Many of the statements made were sworn to before a notary. This meeting lasted from 2:30 p. m. till midnight, with only 40 minutes intermission. The evidence procured by a court reporter covered 104 pages of typewritten manuscript. This evidence was then carefully reviewed by the Committee, and on December 1, 1930, at a special meeting of the Council held in Chicago for this purpose, they reported their findings to the Council, and recommended that the Knox County Society's charter be revoked until such time as its members would reasonably conform with the existing rules and regulations of the Illinois Med-

ical Society, and those of their own Society. The reasons for their decision were fully embodied in their report as deduced from the 104 pages of evidence; and, evidence and all, is in the hands of the Secretary.

This report was unanimously adopted by the Council, and the Secretary instructed to request the Secretary of the Knox County Society to send in the charter and records of his Society. This he refused to do, thereby making it impossible for the Council to issue a new charter to Knox County, as our constitution plainly states that there can be but one component society in each county. This is the answer to any statements, either spoken or written, that the Council has at any time or in any way acted hastily, or prejudicially, or without the full knowledge of all concerned.

Very respectfully,

Cleaves Bennett, M. D.,
Chairman of the Council.

Dr. Bennett: Mr. President, may I have the floor for a few moments, for some explanation of the Council's action which I have just reported?

Ever since their organization, about 1850, the Illinois State Medical Society and the American Medical Association have operated under their respective constitutions and by-laws, these co-operating with each other. Both have been repeatedly revised, but never with any deviation from a few original principles, prominent among these being the right, and duty, of each component society to manage its own internal affairs; and definite procedures of appeal.

The County Societies of this state are component societies of the Illinois State Society, and the Illinois State Society is a constituent association of the American Medical Association. Under specifications which are and always have been plainly laid down, the Council of the Illinois State Society may revoke the Charter of any of its components—and may issue another at its discretion, but only one to each county (see pages 7 and 25 of its constitution and by-laws, as amended to 1930).

If any component society of a constituent association wishes to appeal from the decision of said constituent association, the Judicial Council of the American Medical Association shall have appellate jurisdiction (see page 20 of the 1930 constitution and by-laws of the American Medical Association).

These are the rules. In neither of these constitutions is there any claim whatever that these organizations have any authority over hospitals or who shall attend therein. That is not in the

power, at least, of the Illinois State Medical Society.

Now to get back to Knox County. The whole trouble up there is over the general standardization and management of the Galesburg Cottage Hospital. It has smoldered for years; I suspect there is plenty of reason for it. We have tried to reconcile the opposing factions and they will not be reconciled. That trouble is between the members, in that county, of the American Medical Association and the American College of Surgeons. Neither one of these bodies recognize any authority in the Illinois State Medical Society—no reason why they should. What I am trying to get to you men is that the Council of your Society has no place in that controversy; we have no more right to dictate to the Galesburg Cottage Hospital than to the Provident Hospital in Chicago or the Blessing Hospital in Quincy. The matter must be settled by the American Medical Association and the American College of Surgeons—and they just as well realize it.

With a little common decency on each side, there is no reason for trouble. I am not a member of the American College of Surgeons, but I am on the staff of a sixty-five bed hospital which is standardized by the American College of Surgeons, and I work there with whatever assistants or consultants I please. And as long as I choose ethical men I can do so. There are plenty more such instances. But when two factions of this kind insist on a fight of their own, the parent, governing bodies are the only ones with any authority, as we see it. When these factions get where they no longer choose to operate according to our rules, we cannot help them any.

The President: The next order of business will be the report of the Treasurer.

REPORT OF THE TREASURER

For the Year Ending April 30, 1931

Members of the House of Delegates:

Your Treasurer wishes to make the following report:

RECEIPTS

From the Secretary.....	\$58,641.92
From the Editor.....	22,000.00
Interest on Deposits.....	768.46
Interest on Bonds.....	2,317.50

Total	\$83,722.88
Balance, May 1, 1930.....	57,589.78

Total	\$141,312.66
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PAYMENTS

General Fund	\$27,120.44
Medico-Legal Fund	20,306.40
Legislative Fund	3,558.74
Journal Fund	26,757.76
Total	\$ 77,743.34
Balance, April 30, 1931.....	63,569.32
Total	\$141,312.66
Deposited with the State Bank and Trust Company, Evanston, Ill....	\$61,353.32
*Deposit in Transit from Secretary.	2,576.00
	\$ 63,929.32
Less Check Outstanding.....	360.00
Total, as above.....	\$ 63,569.32
There is held in Trust at the State Bank and Trust Company, Evans- ton, Illinois, in Bonds.....	\$ 51,000.00
Total, Cash and Bonds.....	\$114,569.32

*This Deposit represents Receipts from April 23 to April 29, inclusive. Deposited May 1, 1931, by the Secretary.

Respectfully submitted,

A. J. MARKLEY,
Treasurer.

The President: We shall now have the reports of the Councilors.

REPORT OF COUNCILOR, FIRST DISTRICT Members of the House of Delegates:

Meetings in the various Counties have been held with the usual regularity. There is, apparently, a closer union among the physicians in this district than has existed heretofore. They are realizing more and more, the individual problems are in a large measure group problems that can be discussed to an advantage at our local meetings. An effort has been made to have all doctors in the community join their local society, and to have them realize that the County, State and American Medical Societies are, in reality, their own, and that their individual problems affect the entire medical profession.

In some of our counties a newspaper campaign was put on for vaccination against smallpox and diphtheria. This proved more successful than we had hoped. We feel that we have accomplished a lot, not only in the prevention of diphtheria and smallpox, but in establishing a contact between the patient and the doctor along the lines of preventive medicine, which should be of great value.

It is my belief that there should be a closer contact between the public and the medical profession, and that the aim of the physicians should be to guide the public health activities rather than to be led in public health work by lay-men.

Very truly yours,

Edward H. Weld, M. D.,
Councilor First District.

REPORT OF COUNCILOR, SECOND DISTRICT Members of the House of Delegates:

The Second District consists of Whiteside, Lee, Bureau, LaSalle, Livingston, Woodford and Marshall counties. This district is very well organized, and all of our physicians are interested in medical organ-

ization. I know of only a very few men in the entire district who are not members of our societies. Peace and harmony prevails through the entire district. All these physicians throughout the local towns are on friendly terms and enjoy getting together at their medical meetings for the goodfellowship, as well as their interest in medical advancement.

Most of these counties are holding monthly evening meetings with dinner and a program following the dinner. This system has proved to be the best way to get out a good attendance. Several secretaries of the various societies are now making good use of our Scientific Service Committee. They find it very easy to arrange a good interesting program for each meeting.

LaSalle County has been holding monthly clinics during the summer months at the various hospitals throughout the county. The clinics are put on by the local men of the hospitals for the members of the county in the afternoons with a six o'clock dinner followed by a good program. These clinics have proven to be very instructive and interesting to all the members.

Various lay organizations throughout the district have sent in several requests to our Educational Committee for speakers, that have been filled by Miss McArthur by sending several of our local men, as well as a few Chicago men to fill these dates.

Several of the Women's Federations and Parent-Teachers Clubs throughout the district are still working on the pre-school examinations with the full co-operation of all the physicians. They have accomplished a great deal of good along health measures.

A few of our newspapers have run the health news articles furnished by the Educational Committee.

I have tried to encourage the Woman's Auxiliary organization throughout the district, on the plan to have the ladies meet on our dates and join us in dinners, etc., but as yet I have not met with any success.

Respectfully submitted,

E. E. Perisho,
Councilor Second District.

REPORT OF COUNCILOR, THIRD DISTRICT Members of the House of Delegates:

The Third Council District is composed of seven counties: Cook, Kendall, Kankakee, DuPage, Lake, and Will-Grundy, the latter Society having been formed a few years ago with the consent of the Council from Will and Grundy Counties.

The Chicago Medical Society with more than four thousand members is still the largest component County Unit in the country. The C. M. S. in addition to the Central Society, has fifteen well organized branch societies, and some ten or twelve special affiliated Societies, so that hundreds of interesting meetings are held each year.

The Chicago Medical Society has had another successful year, and in spite of the financial depression which has also affected the practitioners in medicine and its branches, has maintained its membership quite well indeed.

Many staff conferences in a number of hospitals are held regularly, and the internes of these institutions

have been constantly reminded of the necessity of becoming a part of our Medical Organization.

The Will-Grundy Society, which entertained the State Society so well in 1930, reports another successful year, with regular meetings, excellent programs, and good attendance, and a continuance of interest in the Society work.

The Kankakee County Society holds regular meetings, with an excellent interest on the part of members. Special meetings have been held during the year, which have been attended by many visitors from other counties.

The other Societies of the District, with the exception of Kendall, have held regular meetings throughout the year, and report satisfactory conditions existing at the time.

The Societies of the Third District have been interested in our economic problems, and have given them much consideration, along with their scientific programs.

The ever increasing economic problems brought before the Medical Profession should be considered and dealt with promptly by our Societies regardless of their size, for it is generally recognized today more than ever before, that they are equally important with our scientific problems, and we should not hesitate to face them.

Respectfully submitted,

John S. Nagel,
Councilor Third District.

REPORT OF COUNCILOR, FOURTH DISTRICT

Members of the House of Delegates:

The Councilor of the Fourth District has attended all Council meetings and has visited over half the counties in this district. Conditions as found here seem to be quite in keeping with those reported over the country at large.

The business depression has affected adversely, the income of most of our members. In one county alone, there have been eleven bank failures, and one hospital has had to close because of insufficient funds. There is a marked contrast to the signs of medical and hospital expansion as noted last year.

In spite of all this the Medical Societies in the Fourth District have continued with but few exceptions along normal lines. The active societies have continued their activities and the dead ones remain dead. As evidence of the fact that lack of Medical Activities usually indicated nothing more than poor local leadership, our smallest society with a membership of eight, had at its annual meeting, an attendance of over two hundred and twenty. Two other societies with very active memberships have been having alternate meetings with each other.

Compared to this attitude, conditions in Knox County present a marked contrast. In last year's report from this district, a brief statement was made in reference to Knox County's troubles. The statement was purposely brief because at the time it was thought that conditions could be rectified at home, without bringing the State Society in, any more than necessary, but

after the lapse of a year, some rather startling changes have taken place.

There have been troubles between the members of the Knox County Medical Society for many years past, resulting in the formation of factions, and finally of personal animosities, so intense that they are hard for an outside individual to believe.

The present trouble seems to date quite definitely to the standardization of the Galesburg Cottage Hospital, by the American College of Surgeons, in 1929. At this time, all physicians of Knox County in good standing were invited to become members of the staff, and as is the custom in such Standardized Hospitals, were also to sign a hospital pledge, which a majority refused to sign. They were permitted to practice in the hospital for several weeks, after which a time limit was set and they were notified that after that time, no one could take patients to the Cottage Hospital who had not signed the hospital pledge.

The Knox County Society had a hospital committee which had fifteen or sixteen members and they held many meetings, held conferences with the hospital board and drew up an agreement which they tried to have the board adopt. The board objected to three clauses in this agreement and refused to adopt it, so the society by a majority vote declared the Galesburg Cottage Hospital an unethical institution dating from August 15, 1930.

The society at this time was divided into groups, a majority group which practiced in St. Mary's Hospital, and a minority group practicing in the Cottage Hospital. It seemed that an agreement might have been reached, if the majority would have modified their demands a little, or if the minority could have influenced the Hospital Board, to lighten the staff requirements. During this time, the president elect and the Councilor held a meeting with both groups and later a committee from the Council held a similar meeting and tried to make and receive suggestions. It was quite evident that each side felt that they were in the right, and no signs of compromise could be detected by any of the Councilors present.

Sometime following this last meeting when neither side had made any concessions, a petition was sent to the Council, bearing the signatures of the majority group, and a request that the Knox County Medical Society be allowed to surrender its charter, and that a new charter be issued to the officers of the society, all of whom were members of the majority group. This was apparently a method to force the minority group out of organized medicine, and the minority sent in a protest.

At the September Council meeting this matter was brought up and discussed fully. Representatives from both groups were present and presented their sides of the question. After hearing the discussion, the Chairman of the Council appointed a Council Committee of four, who were to go to Galesburg and further investigate conditions and report to the next Council meeting any suggestions as to how the troubles might be settled without taking the charter away, and to

report back, after which the Council was to decide whether or not to accept the charter surrender.

A meeting was held with the two group representatives that same day, and plans were suggested where, by mutual compromise, some agreement might be reached and both sides could be satisfied. From the agreeable attitude of both sides, it began to appear that at last some agreement might be reached and again I believe the psychological moment had come, when if properly handled the troubles could have been ended. Instead, in a short time, notice was received that the majority group had preferred charges against seventeen of the minority group, on from one to six counts. The counts varied from "Unethical Conduct," details not specified, and "Supporting an Unethical Institution, the Galesburg Cottage Hospital," to "Rebellion against the Society," which last was preferred against all seventeen.

Following this, Dr. Nagel of the Council Committee telephoned officers of the Knox County Society and asked that nothing further be done until the Committee had time to meet and report back to the Council and he was given this promise.

The committee held its meeting in Galesburg on October 16, 1930, at the Elks Club, after each member of the Society had been notified that he could present any evidence in his possession, as the Committee was going to Galesburg impartially and with the sole idea of helping them if possible. The session began at 2:30 p. m. and lasted until midnight. All but a few members of the Knox County Society appeared before the committee and in addition, a special hospital group was heard.

Many statements were presented, some of them sworn to and were introduced as evidence. Those by one group would be presented by good reliable men, and would seem to be of decidedly damaging character to the other group, but the second group would present evidence that seemed equally reliable, from equally good men, that would refute the damaging evidence, and in turn present more of the same type of evidence which would be equally damaging.

The evidence produced by this committee consists of 104 typewritten pages made by a Court reporter and consists chiefly of such statements as have just been mentioned and various attempts at agreement with the Hospital Board. The sworn statements had largely to do with the actions of Physicians or nurses, or others connected with the hospital.

Before the Committee meeting was held the majority group had cited thirteen of the seventeen against whom charges had been preferred and had held a preliminary hearing, but at which hearing nothing was done to bring out evidence or any further specifications of the charges preferred, as is required by their by-laws. After the committee meeting, at a special meeting of the Knox County Medical Society the committee appointed by the president to act as a Board of Censors, reported on the hearings which were held for the seventeen men under indictment, and stated that the charges would be "Rebellion against the Society," but recommended that charges be dropped

against two of the seventeen, leaving fifteen to be voted on. This was carried by a vote of twenty-five to twenty.

After hearing the committee report, and this last action of the Knox County Medical Society, the Council voted to revoke the charter of the Knox County Medical Society until such time as they could settle their own troubles peaceably. The minority, who by this time had had enough, also petitioned the Council to take the charter, so in taking this action, the Council did so over the signature of every member of the Society.

Numerous suggestions for solving their admittedly difficult problem have been offered. The most practical appear to be either re-issue a charter to a neutral group or to a few of the less vehement of both sides and then have the remainder readmitted slowly enough to prevent a recurrence of the trouble, or to allow one group to join the adjacent societies and issue the charter to the remainder. Another possibility might be to allow all the physicians in the County to have equal access to both hospitals. This last method, possibly the best, is beyond the control of the Council. The adjoining counties so far, have refused to admit any of the Knox County men, and as to finding individuals who are not very zealous on one side or the other, in my opinion, there are none. In consequence the County is at present without a component society and neither faction has been able to work out a compromise.

Respectfully submitted,

E. P. Coleman, M. D.,
Councilor Fourth District.

REPORT OF COUNCILOR, FIFTH DISTRICT Members of the House of Delegates:

On account of the annual meeting of the State Society occurring about two weeks earlier this year, your Councilor has found it more difficult than usual to secure reports from all the counties in this district. Four counties in the district only held their elections at the last moment when it was necessary to mail the report to the State Secretary. These late elections also make it more difficult for the secretaries to fill out their final reports on account of collection of dues. The larger societies of the district had their elections the first of the year, thereby giving the secretary the advantage of making out a report and collecting the dues between the first of January and tenth of April, as required by the Constitution and By-Laws of the State Society. A definite time for the holding of elections throughout the district would be of material advantage to the secretaries, as well as the Councilor, and greatly diminish the correspondence of the State Secretary.

A report from the various societies in the district shows a total membership of 305. There have been nine deaths, four removals, and one member dropped for non-payment of dues. There has been a total gain in the district of ten.

Sangamon County lost five from its roster last year by death. Among these was a Past-President of the Illinois State Medical Society—Dr. A. L. Brittin, of

Athens, who had enjoyed an active country practice for over forty-five years. He will be greatly missed by his many friends and acquaintances throughout the State. Another prominent and widely known member, even internationally in his specialty, was Dr. Arthur E. Prince.

The economic conditions prevailing at the present time has slowed down the work and activities of some of the Societies in the Fifth District, and emphasize the great advantage of a proficient and seasoned Secretary in maintaining the interest and efficiency of the county society. The progress, the interest and activity of the members of a county society and its value to the community are measured in direct ratio to the ability of its secretary. I recently stated to the newly elected Secretary of Sangamon County, the importance of his attending the Secretaries' Conference during the State meeting each year. It is my observation that those men who do attend represent the outstanding county societies of the district.

It seems at last that the future of the small county society has reached a solution, and I am glad to report that the smallest county society in the Fifth District, with a membership of five, is now harmonious and is meeting whole heartedly its responsibilities in the community. A new hard road which is mostly built and will be completed this year will bring more definite contact between four or five of the smaller counties in the Fifth District, and joint meetings of these Societies can easily be held two or three times a year.

I recently attended a meeting at Robinson, where the counties of Richland, Wabash, Lawrence and Crawford hold a joint meeting quarterly. There were about forty present. From the interest manifested and the character of the discussions, and the personnel of the members, the meeting compared favorably with any of the larger societies of the State.

It is unusual for one member of a Society to give a dinner, not only to his own Society, but to adjoining societies and special friends, but this was the exceptional occasion. On November 4, Dr. Roy A. Buckner, of Gilman, member of Iroquois County Medical Society, gave a duck dinner to about one hundred guests, at his summer cottage on the Iroquois River, north of Watseka. The dinner was followed by an excellent scientific program.

The usual fall meeting was held jointly by Menard and Mason Counties, very well attended and with good interest.

DeWitt County is still one of the most active of the smaller Societies, and has had very excellent programs this year.

The two larger Societies, McLean and Sangamon, have had the usual number of meetings, with good programs.

In considering this report, we believe the Fifth District is making good progress in harmony and medical organization.

Respectfully submitted,

S. E. Munson,
Councilor Fifth District.

REPORT OF COUNCILOR, SIXTH DISTRICT

Members of the House of Delegates:

After a survey of the County Medical Societies in the Sixth District, it is the opinion of your Councilor that they are, in the main, a healthy, but not in an exuberant condition.

In order to draw conclusions at least partly of a local color, a questionnaire was sent to each of the county societies in this district. It is true there are eleven counties in the district, but Calhoun County has no society. There are but five doctors in the county eligible to membership, and since one of the five maintains his membership in the Chicago Medical Society, the number is reduced to four who might be interested in a local Medical Society. As your Councilor has long contended, four doctors in a county can establish and maintain a county society, thus affording those four men membership in the State Society, and county representation in the House of Delegates. In some counties the provision of the By-Laws of the State Society which provides that a doctor within a county which has no society, can maintain State Society membership by affiliating himself with some established county society, works a hardship on the non-society county. I am quite sure, that if this one doctor in Calhoun County who holds membership through the Chicago Medical Society, was unable to maintain membership in this way, he would be the necessary stepping stone for a Calhoun County Society, for he is sold on the desirability, and the advantages, of medical organization.

Taking now the pulse and blood pressure of the ten county societies in the Sixth District:

Adams—Doctors in the County eligible to membership, 74; Members of Adams County Society, 71; Society meetings during year, 10; no trouble due to unethical conduct of a member or members; no mal-practice suits.

This was the questionnaire sent to each county society, with an addressed and stamped envelope for reply.

Brown County—No response.

Pike County—29 eligible; 23 members; 4 meetings; no troubles; no mal-practice suits.

Calhoun County—No society.

Madison County—No response.

Jersey County—Doctors eligible to membership, 7; actual members, 6; one meeting during year; no troubles; no mal-practice suits.

Morgan County—Eligible to membership, 41; actual members, 44 (3 from adjoining counties); meetings during the year, 10; no troubles; no mal-practice suits.

Green County—Eligible to membership, 21; actual members, 19; four regular meetings; no troubles; no mal-practice suits.

Macoupin County—Eligible to membership, 30; actual members, 38 (it is believed these figures are transposed); five meetings during year; no troubles; no mal-practice suits.

Cass County—Eligible to membership, 15; actual members, 9; one meeting during the year; no troubles; no mal-practice suits.

Scott County—No response.

These individual records from the Counties of the Sixth District, speak for themselves.

Respectfully submitted,

Chas. D. Center,
Councilor Sixth District.

REPORT OF COUNCILOR, SEVENTH DISTRICT

Members of the House of Delegates:

The annual report from your Councilor for the Seventh Councilor District will contain nothing startling. The district embraces twelve counties with a county organization in each county. In a few of the counties of the district very little interest is manifest in scientific programs, on account of the small number of physicians in each county, but these physicians avail themselves of scientific meetings in adjacent counties which are numerically stronger and maintain regular scientific meetings from four to eight times annually.

A fine fraternal spirit has been manifested by inter-county meetings; the visiting members putting on the scientific programs. These meetings have been mutually helpful to the Societies participating. In Macon County, in addition to the regular monthly scientific meeting, one meeting each month is given over to the various aspects of "Medical Economics." The lay speakers have brought timely messages and the response has been unusually good.

The Cults, namely, the Osteopaths, have been quite active in Macon County and have tried to force recognition in the new City Hospital, for contagious diseases. The press as usual carried numerous paid articles from the cults, trying to crystalize public opinion in their favor, but the refusal of the local society to be drawn into the controversy, has acted as a boomerang and the staff to date is made up only of Physicians licensed to practice medicine in all its branches. Otherwise all is well.

Respectfully submitted,

I. H. Neece, M. D.,
Councilor Seventh District.

REPORT OF COUNCILOR, EIGHTH DISTRICT

Members of the House of Delegates:

The Eighth District has had an uneventful year. A meeting of the Presidents and Secretaries of the various county societies was held at Mattoon the 16th of September. There were twelve in attendance at luncheon, and they had a very pleasant and profitable two hours informal discussion of various matters, county work, etc., common to all societies.

On October 8, the Councilor's meeting for the District was held in Urbana in connection with the Champaign County Society. Dr. Frank Billings of Chicago was their guest of honor and speaker of the evening. There were 85 in attendance, and the meeting was unusually educational and enjoyable.

The Richland, Lawrence, Wabash and Crawford County Societies held a meeting at Robinson, Illinois, March 12, to which the adjacent Indiana Societies were invited, the Crawford County Society acting as host. It was highly successful and much enjoyed.

One man, a member of the Champaign County So-

ciety, was suspended for six months, from May to November. The charge against him was unethical conduct in the open solicitation of business and offering his services for part of it free gratis. He had been interviewed, and remonstrated with, by the Ethical Relations Committee of the Champaign County Society previously, but to no avail. The formal charges were then preferred, in strict accordance with the rules for such procedure, and the society suspended him for six months. He appealed to the Council, and the Council by unanimous vote sustained the society's action. He did not push his appeal further; was suspended for the six months, and returned to the society in November. The society's action was taken carefully, deliberately, and properly, and I am sure it had a salutary effect. I trust it will not have to be repeated.

Very respectfully,

Cleaves Bennett, M. D.,
Councilor Eighth District.

REPORT OF COUNCILOR, NINTH DISTRICT

Members of the House of Delegates:

The Ninth District is composed of twelve counties; most of the Southern Counties are very small and have but few physicians in them, especially those counties bordering on the Ohio River. This makes it difficult for the members to keep their Societies going.

Jefferson and Hamilton Counties have a joint Society which union was sanctioned several years ago. The Council now believes that it was best for even small Societies to continue their organizations, but it is possible for two or more of them to unite in holding joint meetings. This has been done in one or two instances in the Ninth District, and so far has been worked out satisfactorily.

The hard road system in Southern Illinois makes it easy for physicians to travel many miles in a short time to attend the meetings, which has aided materially in keeping up the interest in many Societies.

Franklin, Williamson and Saline Counties all have fine organizations which are doing good work. Wabash, Gallatin, Massac, Wayne and Johnson Counties all have fair Societies with meetings held three or four times a year, and they enjoy good programs. The other Societies have occasional meetings, but the members of these small Societies frequently attend other meetings, so that they are not deprived of the benefits afforded them. As a whole Society conditions in the Ninth District are in fairly good condition.

The physicians are all good active and ethical men and there is no discord among them as a whole. I have attended a number of interesting meetings over the district during the past year, and as a rule have heard good programs, and have seen a generally good attendance. I have been pleased to note the increasing number of physicians from adjoining counties, and many times from a greater distance, who have attended these meetings. It is the belief of the Councilor of the Ninth District that from an ethical standpoint, the District will compare favorably with other districts of the State, and with the assistance of our

ever willing Educational Committee, and the service available, it will be possible to improve both the meetings, and the attendance during the present year.

Respectfully submitted,

J. W. Hamilton, M. D.,
Councilor Ninth District.

REPORT OF COUNCILOR, TENTH DISTRICT Members of the House of Delegates:

Reports from Counties of the Tenth District indicate that organized medicine has had an active and successful year. Fewer deaths occurred among the profession than those of the year before. Yet our losses were keenly felt and it will be some time before the younger ones qualifying can fill the place of those passing on.

Alexander County held nine meetings jointly with the Pulaski County Society. At each meeting a scientific program was presented and Pulaski County members were present. Two of these meetings were held after a banquet and Physicians of surrounding Counties were invited. This County, the home of the lamented Dr. Grinstead, is not lacking in enthusiasm and it is a pleasure for our profession to see the work laid down by him, taken up by others and carried on successfully.

Pulaski County has a small organization but some faithful, efficient members, who are to be congratulated upon the fact that they are continuing their organization under difficulties and meet jointly with Alexander County each month.

Union County reports twelve meetings, ten regular and two special. This county organization has an annual picnic for the physicians and their families of their own and surrounding counties. The last one was attended by about sixty-five persons. Union County always invite physicians of neighboring counties to share their good programs.

Jackson County held ten meetings, ten local doctors and six visiting M. D.'s were on the programs. Dr. A. R. Carter, age 62, a First Lieutenant in the World War, passed away in Murphysboro about one year ago. He had served as president of the Jackson County and South Illinois Medical Societies. Dr. Henry C. Mitchell of Carbondale, age 73, died October last. He was a past president of the Illinois State Society, surgeon for the Illinois Central Railroad and an active personality in medical organization for all the years covering the memory of near all of us. The fiftieth anniversary of his beginning the practice of medicine was celebrated a year before he died.

Perry County had four good meetings the past year. We have had a decline in membership due to age, death and removal. Interest in organization has not abated and we attend meetings in adjoining counties frequently. But one death has occurred since our last report. Dr. George F. Meade died suddenly in Pinckneyville, October 2, 1930. He had served three terms as Mayor of Pinckneyville and over thirty years surgeon for the Illinois Central Railroad, besides doing other Industrial Surgery.

Washington did not have any meetings during the year and are still paying their dues and reading the

Journal. They were fortunate in having the Southern Illinois Meeting at their door and attended at Mascoutah almost a hundred per cent. Their Secretary reports no deaths during the year.

Randolph County held four meetings and have a good substantial organization. The Ladies Auxiliary is functioning and anyone meeting with them will appreciate its benefits to the profession.

Monroe, another one of our small counties, did not hold any meetings during the year, but did retain their organization.

It is convenient for them to meet with either the Belleville, St. Clair or Randolph County Societies.

St. Clair and its branch organization at Belleville held some good meetings during the year but have been largely occupied with the tremendous task of preparing for our 1931 State Meeting. East St. Louis lost by death Drs. Edgar H. Little and Edward W. Canady, both in the prime of life; Belleville two older men, Dr. Chas. G. Raybill, seventy-two, and Dr. J. N. Kraemer, age seventy-one. All will be missed by the society. Dr. J. L. Wiggins, formerly of East St. Louis but now of the California land of flowers and sunshine, is the only Ex-President of the State Society living who served while a member of the profession in Southern Illinois. His frequent visits home are greatly enjoyed by his former East St. Louis colleagues.

Respectfully submitted,

J. S. Templeton, M. D.,
Councilor Tenth District.

Dr. Templeton: One thing I would like to add. We have to make up our report in time for the State Secretary to incorporate it in his report. I wrote to my constituents and got three letters in response to nine requests. By using the telephone I succeeded in getting my report ready for the State Secretary two days late. If we could have the cooperation of the county secretaries, we would get better reports. I am saying this for the benefit of those present who make these reports.

The President: If there is no objection from the House, we will act upon the reports of the second and seventh districts as printed, as these reports were prepared by the Councilors.

(It was moved that the reports of the Officers and Councilors be accepted as presented and printed. Motion seconded and carried.)

The President: The next order of business will be the reports of Standing Committees.

REPORT OF LEGISLATIVE COMMITTEE

Members of the House of Delegates:

Your Legislative Committee this year has made a very intensive campaign on the members of the Committees in the Legislature from the different Senatorial Districts. In all, over fifteen thousand opposition post-cards have been mailed throughout the

State in these Districts (which in turn were signed by the individual members of the Society and forwarded to the home addresses of the legislators) together with a Bulletin giving full details of the situation. Especially active has been the Legislative Committee of the Chicago Medical Society, under the able direction of Dr. Thomas P. Foley.

When the Judiciary Committee was considering the Osteopathic Bill, which would liberalize the osteopath's license and allow him to do surgery and give drugs, and also the vicious Anti-Vivisection Bill, which would deny scientific laboratories the right to experiment with mongrel dogs, each member of the Judiciary Committee, numbering over fifty, was literally showered with cards from the doctors of his District. The proponents of both Bills had worked insistently for months in a quiet campaign in favor of their respective measures and had gained considerable ground. Several Committee members from Cook County have informed the Chairman of your Legislative Committee that they received between three and four hundred of these cards prior to the hearing. The result was that the Osteopathic Bill was "put to sleep" by referring it to a sub-committee, which means its legislative death, and the Anti-Vivisection Bill was most ignobly defeated by a vote of thirty-two to five.

The work of the Illinois Society for the Protection of Medical Research, under the efficient guidance of its secretary, Dr. A. C. Ivy, in conjunction with the work of the medical men, was so successfully carried out that when the Committee was ready to consider the Anti-Vivisection Bill, a motion was made to "kill" the Bill before either the proponents or the opponents had been heard. However, the Committee was prevailed upon to hear the bill and the proponents through their legal representative spoke for nearly half an hour in favor of the measure. Through his lack of diplomacy, as well as the extravagant mistruths with which he had attempted to convince the Committee, it was quite apparent that the Judiciary Committee, composed entirely of lawyers, was thoroughly "sold" that the Bill should be "killed," and insisted on a roll-call, telling the opponents of the Bill that it was unnecessary to hear them, with the result that the Bill was hopelessly defeated.

This is just one illustration of the very excellent cooperation received from the members of the Illinois State Medical Society both in Cook County and down state. The same method is being used with other but weaker cult bills.

The latest Bulletin is included as a part of this preliminary report of your Legislative Committee. It was as follows:

"THE BATTLE OF THE CULTS"

"Bidding for full legal equality with the medical profession, the cults have descended upon the Legislature this year in a desperate and determined effort to radically lower the standard of medical practice in Illinois. If not to lower medical standards to the level of their qualifications, why do they ask for new laws? The approach to medical practice under the

present Medical Practice Act is wide open to all who qualify.

"Best organized of the cults this year are the Osteopaths. They have four bills pending. These they have pressed forward with great vigor and steadfastness of purpose, with much enthusiasm, splendid teamwork and a convincing array of exhibits. Astute leaders with plenty of strength in numbers have marked the lobby delegations whose repeated appearance in Springfield have been skillfully planned.

"On one occasion an osteopathic lobby delegation held the House Judiciary Committee for nearly two hours. Illinois was pictured on an intriguingly clever map display, along with one or two southern states, as the only states which have not kept abreast of progress by legalizing osteopathic surgery. Superior exhibits, well designed and constructed, purported to show that osteopaths are taught fully as much surgery in their schools, hour for hour, as is given in class A medical colleges. Indeed some charts, displayed and explained to the legislators, indicated that osteopathic schools now offer more hours in surgery than does the medical college of the University of Illinois and other class A medical schools. Osteopaths were shown by the exhibits and held out verbally to be adequately and efficiently trained in obstetrics.

"In short, Illinois was portrayed to a committee of our General Assembly as a backward state which stubbornly denies its citizens the privileges and benefits which osteopathy stands ready to give but for obsolete and discriminatory laws. On the surface, the osteopathic lobby made out a good case which certainly got a sympathetic hearing. Nothing short of a detailed analysis of the claims and a representation of the full facts about facilities for and courses of study in class A medical colleges would have refuted the testimony.

"To maintain the present standard of medical practice in Illinois, which was tantamount to defeating the osteopathic bills, the Chairman of your Legislative Committee proceeded about as follows:

"A copy of the latest catalogue of the Kirksville Osteopathic School, generally regarded as the best in the country, was obtained. Along with it were assembled copies of current catalogues from class A medical colleges. From a comparison of the curricula set forth in these catalogues it was made manifestly clear to the legislators that the work in surgery and obstetrics offered at the school of osteopathy is woefully elementary and inadequate compared with that offered at our class A medical colleges.

"A survey and appraisal of the Kirksville faculty list disclosed that of some forty professors, only three undertake to teach surgery and to these are assigned about one hundred-fifty senior students. It appeared further that none of the three had ever qualified in the books from which they undertake to teach, and that all three of the professors of surgery are listed as professors in other departments as well.

"The Osteopath lobbyists set forth with pride that their schools use for texts the same books found as texts in the class A medical colleges. They cited the

volume on anatomy by Cunningham and Gray; the books on diagnosis by French, Blumer, Barton, Yates and Cabot; obstetrics by Delee, Williams and Edgar; physiology by Howell and Starling; practice by Osler, Stevens and Cecil; surgery by Foote, Babcock, DaCosta, Scudder, Cotton, Kelley, Nelson, Keen and Lewis.

"Your legislative representative pointed out that skill is acquired and talent developed in medical practice far more by precept, example and personal experience than by a study of books alone, be the books ever so authoritative and the professors ever so learned in book knowledge. To illustrate the significance of this point it was shown that forty professors on the University of Illinois Medical College faculty devote their entire teaching time to surgery with a senior class of about 120 against a staff of three professors at Kirksville who attempt to instruct a senior class of some one hundred-fifty in surgery. Furthermore, it was pointed out that the city of Kirksville has a population of only about 8,000 which narrowly limits surgical clinical material. The imported patients at Kirksville are predominantly of the chronic neurotic type.

"From the catalogue of the Chicago School of Osteopathy it was shown that the faculty carried only some forty names against more than two hundred twenty-five at the University of Illinois medical college. Here again only three of the Osteopathic professors were scheduled as teachers of surgery and they, too, held professorships in other departments. At this school the dispensary clinic has the advantage of a large city population to draw from, but the cases are mostly chronic neurotics, a class which naturally gravitates to Osteopathy in their circle around the whole gamut of practitioners and 'healers.'

"Your Legislative Committee pressed home to the law-makers the point that teaching small groups of students by precept and demonstration, supplemented by a study of texts, gives to each student a training far superior to that form of teaching which crowds many students into one class and depends mostly upon text books with a minimum of observation and practical demonstration.

"That this important difference actually prevails between the osteopathic and class A medical school curricula and teaching systems was proved by the catalogues in hand. The osteopath lobbyists chose to make no reply to this indictment. For a decision as to which system should prevail as a measuring stick of medical practice standards in Illinois, the matter was turned over to the good judgment of the House sub-committee who listened to the final arguments.

"In addition to the four osteopathic bills there are now pending in the Legislature six naprapathic bills, two chiropractic bills, a physio-therapy bill, and two vicious mid-wife bills."

Respectfully submitted,

C. E. Humiston, M. D.,

E. Bowe, M. D.,

J. R. Neal, M. D.,

Legislative Committee.

REPORT OF PUBLIC POLICY COMMITTEE

Members of the House of Delegates:

There has been one meeting of the Public Policy Committee attended by Dr. Way and the Chairman. There have been no problems submitted to the Committee by the House of Delegates, nor the Council, so the Committee interprets this condition to indicate that no problems of major importance, that the Committees or Council could not solve, have arisen during the past year. The Council, at a recent meeting, discussed the work of this Committee, and agreed that it is a highly important one, and should be permitted to function more than it has in the past. It is quite probable that during the next year, the Public Policy Committee will have more work to do than it has in the past.

In reference to the report of the Public Policy Committee before this House in 1930, your present Committee wishes to report that pernicious radio broadcasting has been reduced considerably. The Federal Radio Commission has one case before it now, which has attracted a nation-wide attention. The Commissioner has recommended that the license in this case be not renewed. A final decision will probably be made within the next 30 days.

Your Committee wishes to again remind you that it is always willing to function, and will do the very best that it can in aiding the Society, Council, or officers in solving problems dealing with Public Policy.

Respectfully submitted,

Frederick H. Mueller,

Chairman.

Henry J. Way,

George Michell.

REPORT OF MEDICO-LEGAL COMMITTEE

Members of the House of Delegates:

During the year from May 1, 1930, to May 1, 1931, your Committee reports the trial of a number of cases. Seven lawsuits have been tried, three appeals to the Appellate Court of Illinois and one appeal to the Supreme Court of Illinois have been handled and completed.

In five of the cases tried, the defendant obtained a "not guilty" verdict. In two fracture cases, verdicts were returned for the plaintiff's for \$2,500.00 and \$3,000.00, respectively. One appeal to the Appellate Court by the defendant was lost, one appeal to that court was affirmed for the defendant and one appeal to the Appellate Court was settled by the Insurance Company for less than the verdict. An appeal of the plaintiff to the Supreme Court of Illinois was dismissed by that court.

May we again warn practitioners to refrain from writing explanatory letters to a patient after a claim for malpractice has been made.

Fracture cases continue to be a fruitful source of malpractice claims. Always use the x-ray.

The law in regard to sponge cases is becoming more favorable to the doctor. A recent Supreme Court decision held that the doctrine of *res ipsa loquitur* did not apply to such a case.

Your Committee has been able to settle one case

and expects to settle another where the malpractice claim was a set off for a bill rendered. Under the existing financial depression and the agitation for State Medicine we believe it a good thing to attempt to compromise some of these claims.

The new rules of the Superior and Circuit Courts of Cook County have temporarily retarded the disposition of cases, so that only nineteen cases were disposed of this year as compared with thirty-four last year at this time. A number of cases are marked for trial and should be disposed of this spring.

Respectfully submitted,

Medico-Legal Committee,
J. R. Ballinger, Chairman.
George Weber, Secretary.
R. O. Hawthorne,
Walter Wilhemj,
A. H. Geiger,
Oscar Hawkinson.

REPORT OF EDUCATIONAL COMMITTEE

April 1, 1930, to March 31, 1931

Members of the House of Delegates:

The work of the Educational Committee may be classified under five general departments and the following report presents the activities carried on in these various fields.

SPEAKERS' BUREAU

Five hundred and fifty-three Health talks were given by members of the Illinois State Medical Society before a total audience of 180,000. These speaking appointments were about equally divided between Cook County and down-state.

The Educational Committee has scheduled physicians to address Teachers' Institutes, high school assemblies, women's clubs, parent teacher associations, university clubs, household science groups and home bureau organizations, farmers' institutes, nurses' alumni associations, churches, business and professional clubs, fraternities at universities, young mothers' clubs, Y. M. C. A., Y. W. C. A., Chambers of Commerce, men's service clubs as Rotary, Lions, Optimist, Kiwanis.

Special emphasis has been given to subjects of current interest. For example, a number of talks on animal experimentation were scheduled for important clubs; talks on the importance of diphtheria immunization and smallpox vaccination were given in communities sponsoring campaigns; several speakers were requested to talk about cancer at public meetings of women's clubs; physicians gave talks on the importance of early detection and correction of defects in children to promote interest in the Summer Round-Up sponsored by the Illinois Congress of Parents and Teachers.

Over 40,000 high school students of Illinois heard health talks given by members of the Speakers' Bureau.

A representative of the Committee addressed the Annual Meeting of the Northeastern Division of Illinois State Teachers Association, including Cook County, with an attendance of over 2,000 teachers.

A record of all appointments together with a report from the organization are on file in the office of the Committee.

RADIO

Four hundred and sixteen Health educational talks were given over the radio by physicians. All material was prepared by individual physicians and approved by the Committee. Due to the fact that the studios of Stations WJJD and WGN are in Chicago, members of the Chicago Medical Society were asked to prepare and broadcast these as radio talks.

The Committee has been responsible for three ten minute talks each week from WJJD and for a weekly ten minute talk from WGN. The Young Mothers' Hour sponsored by the Chicago Pediatric Society and the Educational Committee has been given every morning for the past twelve months and will be continued indefinitely. The excellent material presented in these talks have received favorable comment from many sections of the United States.

Letters with reference to the radio programs of the Educational Committee have been received from Mississippi, Iowa, Indiana, Wisconsin, Michigan, Ohio, and Illinois.

PRESS SERVICE

Eleven thousand eight hundred and ninety-eight articles announcing medical meetings, educational health articles and special features were released to Illinois newspapers. Every paper in the state has received material from the office of the Committee.

During Health Promotion Week, special articles were released to all newspapers and this material covered the subjects designated for emphasis each day of the week.

Notices of the Summer Clinics sponsored by the Chicago Medical Society were released to all papers in the State and to all State Medical Journals.

An article emphasizing the importance of discovery and correction of defects in pre-school children was written and released to all newspapers in communities registered for the Summer Round-Up campaign by the Parent Teacher Associations.

Following information concerning epidemics received from the State Department of Public Health Reports, educational articles re epidemic diseases were sent to community newspapers.

Editors of Illinois newspapers have been most generous in carrying much of the material sent out by the Educational Committee. Notices of medical meetings have received favorable space. The Committee gave assistance to the following county and district societies in promoting medical programs:

Cook, Coles-Cumberland, Christian, Crawford, Alexander, Adams, Bureau, DeKalb, Fulton, Franklin, Grundy, Henry, Jackson, Jersey, Iroquois, Kane, LaSalle, Lawrence, Macon, Madison, Peoria, Rock Island, Richland, Vermilion, Wabash, Whiteside, Warren, Will, Winnebago, Sangamon, Schuyler, St. Clair, Southern Illinois Medical Association (this includes all counties in lower half of state), Tri-County Medical (Warren, Knox and Henry Counties), Ninth and Tenth Councilor Districts.

One hundred and twenty-four Health education articles were written and approved by the Committee. These articles were used in about 100 newspapers of the State as a daily or weekly Health Column over the signature of the local county medical society or the Illinois State Medical Society.

The Committee released to newspapers announcements of a cancer program sponsored by the Coles-Cumberland County Medical Society and a number of lay organizations; announcements of a public meeting on animal experimentation sponsored by the Campaign Public Health Association; and announcements of a health institute supervised by the Woman's Auxiliary to the Vermilion County Medical Society.

MISCELLANEOUS SERVICE

One hundred and thirty moving picture films were secured for lay and medical groups. Most of the films came from the State Department of Public Health, the U. S. Bureau of Mines at Pittsburgh, Metropolitan Life Insurance Company of New York, the Y. M. C. A.

Twenty-five Poster exhibits were sent to schools.

One Exhibit of educational material available at the American Medical Association was sent to the annual meeting of the Illinois Biology Teachers Association.

Twenty-four packages of material on State Medicine were supplied to debating teams in colleges of Illinois, Michigan and Indiana. The Committee has asked these debating teams to furnish it with copies of the material presented in these inter-collegiate debates.

Three hundred and sixty-five package libraries loaned to physicians and 25 special folders compiled on requested subjects.

Four thousand cards, representing roster of Chicago Medical Society, indexed and filed according to Senatorial Districts.

Thousands of clippings and articles were filed in the office of the Committee for reference and for the information of members of the Illinois State Medical Society.

Cooperation given to promotion of Health Week, American Education Week, Boys' Week, Health Campaigns supervised by County Medical Societies.

Women's Auxiliaries supplied with program material, study outlines, and questionnaires mimeographed and mailed.

Information supplied to individuals or organizations in Iowa, Florida, California, Oregon, Michigan, Texas and New York.

SCIENTIFIC PROGRAMS

One hundred and sixteen scientific papers scheduled for county medical societies. (See report of Scientific Service Committee.)

CONTACT WITH ORGANIZATIONS

The Civic Federation of Chicago, Illinois Federation of Women's Clubs, Illinois Congress of Parents and Teachers, Illinois State Dental Society, Illinois Tuberculosis Association, Illinois State Department of

Public Health, Illinois Society for the Prevention of Blindness, Illinois Society for Mental Hygiene, American Association of University Women, Extension Division of University of Illinois, Crippled Children's Commission of the Elks, Institute for Juvenile Research, Federation of Cook County Women's Organizations, Women's Auxiliaries to State and County Medical Societies, County Health Departments, County Superintendents of Schools, County and District Teachers' Associations, Chicago Woman's Aid, Council of Jewish Women, Farmers' Institutes, Home Bureau Units, Medical Schools, American Medical Association—splendid cooperation given by Bureau of Investigation, Bureau of Health and Public Instruction, Council of Medical Education and Hospitals, and the Bureau of Legal Medicine and Legislation; Y. M. C. A.'s—Letters sent to all Y. M. C. A. executive secretaries regarding posting of signs belonging to Public Health Institute. Series of lectures arranged for the Englewood Y. M. C. A., Chicago, and for the Pre-Medical and Pre-Dental Club of Central Y. M. C. A. College. Moving picture films secured for the Wilson Avenue Y. M. C. A. for showing in larger factories of Chicago. Men's Service Clubs—Rotay, Kiwanis, Lions, Optimists; Chicago Heart Association; State Nurses Association; Churches, Normal Schools.

A report of the work of the Educational Committee would not be complete without mention of the very splendid assistance which has been given by the individual members of the Illinois State Medical Society. The Officers and Councilors as well as the hundreds of men who, without remuneration, have given time and interest in promoting the health education program as outlined by the Committee make the above report possible.

The Educational Committee acts as liaison committee between the Illinois State Medical Society and the various lay organizations of the State, particularly those interested in health activities. County medical societies can be of infinite value in strengthening these contacts and thereby increasing our influence with lay groups throughout the State. To certain extent they can guide and direct the health activities of their local organizations. These contacts are invaluable to the Illinois State Medical Society in promoting a better understanding of medicine and its problems and in addition, the spirit of cooperation and friendliness which is consequently developed is of distinct help when it comes to legislative matters. This is of equal value to the public. The manner in which medicine meets these lay groups will determine to a great extent the future position of medicine in Illinois.

Respectfully submitted,

William D. Chapman, M. D.

James H. Hutton, M. D.

Charles J. Whalen, M. D.

R. R. Ferguson, M. D.,

Chairman.

Jean McArthur,

Secretary.

REPORT OF SCIENTIFIC SERVICE COMMITTEE

Members of the House of Delegates:

This Committee, created by the Council in 1926, consists of the Chairman and Officers of the Society, the Secretary, President and President-Elect. To these are added from time to time sub-committees to consider various sections of its program such as medicine, surgery, obstetrics, et cetera.

The purpose for which the Committee was created was to make available to county societies speakers on any subject that might interest the society. By being assured of their ability to secure speakers, it was hoped that many societies would be encouraged to meet more frequently.

Efforts were made to encourage a study of those aspects of medicine which were apt to put the doctor in a bad light in the public eye, such as the infant and maternal rate. More meetings were encouraged to present talks on obstetrics and pediatrics. At the present time plans are under way for the preparation of slides and lecture outlines in the field of obstetrics and gynecology. These will be available to physicians throughout the State.

Lately an attempt is being made to encourage the study of mental hygiene. The treatment both preventive and curative of mild mental disorders is being stressed as being within the province of the private practitioner, particularly the family doctor. This matter is being studied by a group of our most distinguished neuro-psychiatrists. They expect to evolve a plan whereby this subject can be presented to the rest of us in a simple non-technical language. The objection to having speakers on mental hygiene and the treatment of mild mental disorders before county societies has been their language has been too highly technical. We expect this group to overcome that objection. It is hoped that county societies will then take an added interest in this very important subject. Remember that about twenty per cent. of the hospital space in this country is devoted to nervous and mental cases. Announcements of progress in this matter will be made through the office of Doctor Camp and the Educational Committee.

The entire field of medicine has been divided into a number of specialties or otherwise and various groups of men particularly qualified in these fields have been asked to outline that particular field. Speakers have been asked to volunteer for service before county societies. The response has been generous in both cases. Men have given freely of their time both in organizing these various departments and also as speakers.

During the life of the Committee, there has been a noticeable reduction in infant mortality in this State. The reduction has been greater in Illinois than in some neighboring States that accepted Sheppard-Towner money. The Illinois State Medical Society can justly claim a share of credit for this.

240 speakers are listed as willing to present scientific papers before medical societies; 98 down state, 142 Chicago.

During the past year the Committee gave the following service:

- 116 speakers were scheduled for scientific meetings.
- 17 talks on surgical subjects.
- 26 talks on medical subjects.
- 8 talks on endocrinology.
- 3 talks on gall bladder diseases.
- 5 talks on gastro-intestinal conditions.
- 7 talks on nervous and neurological conditions.
- 3 talks on obstetrics and gynecology.
- 6 talks on orthopedics.
- 6 talks on genito-urinary and protologic subjects.
- 10 talks on medical economics and medical organization (we even have one business man, Mr. W. K. Lasher, who is presenting the doctor's problem from the business man's point of view).
- 3 talks on pediatrics.
- 3 talks on dermatology.
- 19 talks on miscellaneous subjects.
- 34 counties were served and several requests for speakers came in from other States.

The Committee, entirely through Doctor Camp, arranged for a crippled children's clinic in Warren County under the supervision of the County Medical Society. Reports indicated that this was the best clinic of its kind in the history of the society. A pathological conference was arranged for La Salle County and proved to be one of the most interesting meetings of the year. Motion picture films were secured for three medical meetings.

The Educational Committee and Doctor Camp's office have given assistance to county secretaries in promoting special meetings or meetings where scientific papers were presented by men of the Scientific Service List. Invitations have been sent to members of the county and adjoining county societies. Releases have gone to all newspapers. This service has been appreciated in some counties where the average attendance has been increased from twenty-five or thirty to fifty-five or sixty. Some societies have had more than one hundred per cent. attendance.

Splendid cooperation has been given by the Deans of the medical schools and individual physicians throughout the State.

APPOINTMENTS MADE BY SCIENTIFIC SERVICE COMMITTEE, MAY 1, 1930, TO MAY 1, 1931

County	Speaker	Subject
Henry	Edwin W. Hirsch	"Pathology, Diagnosis, and Treatment of Prostatic Hypertrophy."
Henry	Clement L. Martin	"Proctologic Problems of General Interest—with lantern slides."
Mercer	R. K. Packard	"Medical Economics."
Mercer	Lucius H. Zeuch	"Pioneer Physicians and Shrines of Western Medicine."
Will-Grundy	Doctor Larkin	"Radium in General Practice."
Rock Island	Don C. Sutton	"Treatment of Heart Disease."
Randolph	Elsworth S. Smith	"Heart and Cardiac Vascular Diseases."

- Iroquois—E. G. C. Williams—"Diseases of the Blood."
- Iroquois—E. J. Wheatley.
- Randolph—Cecil M. Jack—"Non-Tuberculosis Diseases of the Chest."
- McHenry—Harry M. Hedge—"Some Common Diseases of the Skin."
- Jackson—A. M. Miller—"Spinal Anesthesia."
- Piatt—John R. Neal—"Medical Economics."
- Hancock—J. E. Camp.
- Hancock—William D. Chapman.
- Hancock—E. P. Coleman.
- Hancock—Andy Hall—"Public Health and Practicing Physicians."
- Christian—T. O. Freeman—"Acute Abdominal Emergencies."
- McHenry—Walter R. Fischer—"Foot Deformities—Etiology, Prevention and Treatment."
- Kane, Elgin State Hospital—John R. Harger—"Treatment of Goiter in Insane."
- Rock Island—Nathan S. Davis III—"Diagnosis and Treatment of Heart Disease."
- Coles-Cumberland—Harold Swanberg—"Modern Treatment of Carcinoma of the Cervix."
- Alexander—Edmund Andrews—"Diagnosis and Treatment of Gall Bladder Diseases."
- Iroquois—E. P. Sloan—"Procidencia."
- Iroquois—H. Wellmerling—"Treatment of Varicose Veins."
- 9th and 10th District Meeting—Nathan S. Davis III, William D. Chapman—"Hypertension," "Medical Organization."
- Will-Grundy—A. A. Goldsmith—"Chronic Colitis."
- Tri-County Medical Meeting, Galesburg, Knox-Warren-Henry—R. K. Packard—"Surgical Mortality and Morbidity."
- Tri-County Medical Meeting, Galesburg—A. A. Goldsmith—"Chronic Colitis."
- Tri-County Medical Meeting, Galesburg—E. L. Cornell—"Forceps Delivery."
- Rock Island—Harry M. Hedge—"The Modern Conception and Treatment of Syphilis."
- Will-Grundy—A. F. Lash.
- Will-Grundy—James G. Carr—"Cardio-Vascular Disease."
- Will-Grundy—Edmund Andrews—"The Diagnosis of Chronic Abdominal Pain."
- Iroquois—Walter Nadler, Lowell D. Snorf—"Medical Treatment of Hepatic Disease," "Colitis."
- Will-Grundy—Charles Spencer Williamson—"Research Work Along the Lines of Anemia, Especially Nutritional Anemias and Pericarditis."
- Rock Island—George DeTarnowsky—"Surgical Management of Carcinoma of the Colon."
- Will-Grundy—Hugh McGuigan—"Digitalis Therapy."
- Will-Grundy—H. D. Singer—"Syphilis of the Nervous System."
- Jackson—T. O. Freeman—"The Acute Abdomen."
- Will-Grundy—William F. Petersen—"Focal Reactions in Chronic Disease."
- Warren—Philip Kreuscher—"Crippled Children's Clinic."
- Will-Grundy—L. G. Osgood—"What Is Wrong with the Medical Profession and How Can the Confidence of the Public Be Regained?"
- Sangamon—Peter Bassoe—"Acute Infections of the Central Nervous System."
- Will-Grundy—Peter Bassoe—"Acute Infections of the Central Nervous System."
- McHenry—Don C. Sutton—"Treatment of Pneumonia."
- Warren—John A. Wolfer—"Surgical Subject."
- Warren—William H. Holmes—"Modern Conceptions of Nephritis."
- Union—D. K. Rose—"Interpretation of Symptoms in Differential Diagnosis of Urinary Infection."
- Rock Island—Lindon Seed—"The Determination of Surgical Risk in Exophthalmic Goiter."
- Will-Grundy—Wilber E. Post—"Nephritis."
- La Salle—George DeTarnowsky—"Carcinoma of the Colon."
- La Salle—Doctor Aaron Arkin—"Cardio Vascular Disease."
- Will-Grundy—Harry M. Hedge—"Some Common Diseases of the Skin."
- Iroquois—John F. Carey—"Diseases of the Urinary Tract in Infants and Childhood."
- Sangamon—Harry Louis Alexander—"Allergy."
- Des Moines, Ia.—Harold M. Camp—"How Public Health Education Affects the Physician."
- Williamson—LeRoy H. Sloan.
- Will-Grundy—Andy Hall—"Public Health."
- Will-Grundy—William A. Evans.
- La Salle—James P. Simonds—"Clinical Pathological Conference."
- La Salle and Bureau—William H. Holmes—"Neurological Lesions Encountered by the General Practitioner."
- La Salle and Bureau—John A. Wolfer—"The Diagnosis and Treatment of Cancer of the Rectum and Sigmoid."
- De Witt—James H. Hutton—"Endocrinology."
- Champaign—Emil Levitin—"The Prevention of Nervous Disorders."
- Vermilion—James H. Hutton—"The Relation of Endocrine Disturbances to the General Field of Medicine and Surgery."
- Rock Island—Julius Hess—"Focal Infections of Childhood."
- Will-Grundy—Philip Kreuscher—"Internal Derangements of the Knee Joint."
- McHenry—Emmet Keating—"Treatment of Heart Disease."
- Will-Grundy—Philip Kreuscher—"Internal Derangement of the Knee Joint."
- Iroquois—A. Merrill Miller—"Clinic, Demonstrating Spinal Anesthesia."
- Iroquois—E. B. Cooley—"Pernicious Anemia."
- Will-Grundy—Nelson M. Percy—"Goiter."
- Sangamon—A. C. Ivy—"Some Observations on the Cause of Gall Stones."
- Sangamon—William R. Cubbins—"Fractures—Conservative and Operative Treatment."
- Coles-Cumberland—Andy Hall—"Cancer and Public Health."

Coles-Cumberland—Gilbert Fitz-Patrick—"Cancer."
 Will-Grundy—James H. Hutton—"The Endocrine Factors In and Endocrine Control of Obesity."
 Joint Meeting: Lawrence, Richland, Wabash, Crawford—Samuel E. Munson—"Hypertension."
 Will-Grundy—Sydney Kuh—"Early Mental Disorders—Acute and Chronic."
 La Salle—Gilbert Fitz-Patrick—"Cancer."
 Sangamon—William D. Chapman—"Medical Organization."
 Sangamon—Harold M. Camp—"Medical Economics."
 Livingston—W. K. Lasher—"Medical Economics from a Business Man's Point of View."
 Rock Island—Charles Morgan McKenna—"Surgery of the Kidney with Special Reference to Nephroposis."
 Mercer—William H. Holmes—"Nephritis."
 Rock Island—Sydney Kuh—"Neurology."
 Will-Grundy—Gilbert Fitz-Patrick—"Obstetrics."
 Kankakee—Clement L. Martin—"Treatment of Hemorrhoids by Non-Surgical and Operative Methods."
 Jackson—Marshall Davison—"Perforated Gastric Ulcer."
 Jackson—William R. Cubbins—"Intestinal Obstruction."
 Henry—Paul Starr—"Nephritis."
 Henry—A. J. Larkin—"Cancer."
 Sangamon—E. L. Cornell—"Forceps Delivery." Film.
 Coles-Cumberland—Clement L. Martin—"Protologic Problems of General Interest."
 Fulton—Leroy H. Sloan—"Diabetes."
 Mercer—Paul B. Magnuson—"Making Success Out of Failure in Certain Common Fractures—by Simple Procedures, illustrated by lantern slides and movies."
 Fulton—James H. Hutton—"Endocrine Factors in and Control of Diabetes."
 Fulton—William H. Holmes.
 Fulton—Arthur H. Parmalee—"Some Observations on Breast Feeding."
 La Salle—Sumner Koch.
 Rockford—A. M. Simons—"Medical Economics."
 Kane—James H. Hutton—"The Relation of the Endocrine Glands to Gynecology and Obstetrics."
 Bureau—W. H. Fenn—"Angina Pectoris."
 Bureau—W. H. Nadler—"Medical Treatment of Liver Diseases."
 Clinton, Ia.—James G. Carr—"Biliary Tract Disease."
 Clinton, Ia.—Francis E. Seneer—"Skin."
 Iroquois—Geza De Takats—"Injection Treatment of Varicose Veins."
 Iroquois—George DeTarnowsky—"Low Back Pain."
 Will-Grundy—C. J. Lundy—"The Electrocardiograph—Its Value to the General Practitioner."
 Will-Grundy—Carl Hedblom—"Diagnosis of Pulmonary Tuberculosis."
 Will-Grundy—H. L. Kretschmer.

Respectfully submitted

James H. Hutton, Chairman.

REPORT OF THE EDITOR

Members of the House of Delegates:

In the face of the most disconcerting year of international economic depression, THE ILLINOIS MEDICAL

JOURNAL stands superbly aloof from "this season of our discontent."

THE ILLINOIS MEDICAL JOURNAL has enjoyed the best twelve months of its thirty years of existence. What this means of struggle on the part of the JOURNAL and its staff is obvious. For while the editor may be pardoned for believing that "the eternal years of right prevail" there's another side to the story.

Whether in Illinois or elsewhere the financial condition of the average physician has become a duplicate reflection of the economic situation in every business, industry, trade or profession. Collections generally have hit a new low level. Actual bankruptcy confronts many a man who a year or two ago dwelt in competency. For, coupled with the depression that has gripped the world in general, the practicing physician has felt during this past year as never before the direst results of those evils against which the editor both as a practicing physician and officially as editor has been crusading for twenty years. Since these evils are with us still, cropping up in new guises whenever one of the more familiar manifestations has been destroyed, the campaign must continue and that with redoubled effort.

Having conquered an almost limitless number of cancellations for advertising in the JOURNAL and borne up against an incalculable number of depreciated placements and of having made the magazine hold its own in a year when the publishing business was merely a matter of one earthquake after another—even the historic *New York World* of name, fame and prestige is now no more. Too, the editor is foolish enough to believe that the fates are with the rights of medicine and that with a good fight the profession will weather the storm ably and well.

Speaking briefly, some of the many evils against which the JOURNAL has crusaded during the last decade are:

1. Attempts by Congress and State legislatures to dictate therapeutic procedures. Diagnosis, dosage and demand should be regulated by scientific judgment in all its flexibility rather than by inflexible, legislative statute.

2. Attempts by lay organizations and individuals, and by capitalistic foundations to effect arbitrary control and supervision of disease, and of the sick and ailing to the elimination of the physician as an individual, or as a unit in a purely scientific society, such as a city or county or state medical society or its divisional.

3. Attempts at fiat legislation that interfere in any way with the proper practice of medicine.

4. Attempts by politicians, misguided, ignorant or malicious, as the tools of cults, quacks and charlatans, to write upon the statute books of any state, county or city, legislation that will permit any imposter to enter the practice of medicine or in any way to assume care of the sick or ailing.

5. Attempts by corporations to act as intermediaries between physician and patient and thus eliminate the benefits to the patient of a direct contact with the medical advisor.

6. Attempts through various agencies to take from the hands of the family physicians, aided if necessary by a local specialist, the requisite periodic health examination.

7. Attempts to effect an indirect medical service anywhere and in any way through a third party.

8. Attempts to install an over-centralization of medical authority with all the dangers and destructive influences attendant upon such non-American bureaucracy.

9. Attempts to create a federal despotism or a modified soviet with socialization of medicine the touchstone for this calamity.

10. Attempts by corporations to practice medicine in any form.

11. Attempts by lay corporations to dictate to medical societies as to policies and methods of conducting both scientific and personal business and affairs, and thereby discounting the profession.

The causes for which the JOURNAL continues to fight are:

1. Defense of the medical profession from emotional villification from misguided individuals in the profession and from ignorant individuals of the general public.

2. Protection of the profession from misleading opinions engendered in the public mind through unfair, untruthful, and bombastic newspaper publicity attained on the part of certain members of the profession from time to time.

3. Restoration of the rank of the family physician, that fundamental factor in the practice of medicine that has unfortunately suffered temporary displacement through the enthusiastic if not altogether balanced rush for specialization that has, through no precise fault of the doctors themselves, permitted a specious foothold for cults in the chasm between the service of the specialists and the average service afforded by the average modern general practitioners.

4. Realization on the part of both mature doctor, recent graduate and undergraduate student that the general public is demanding increasingly a punctilious service for those comparatively trivial ailments that comprise the bulk of human ailments and that proffer fertile mediums for the increase of charlatanism.

It must be remembered that still demanding our attention are such evils as—

(a) Increasing disposition to paternalism.

1. Federal interference.

2. State interference.

3. County or township interference.

4. Municipal interference.

(b) Increasing tendency to bureaucracy.

1. Installation of Portfolio of Medical Supervision.

2. Standardization of profession.

3. Destruction of individualism.

(c) Over-specialization of profession:

1. Increased cost of medical service.

2. Abolition of "family doctor."

(d) Centralization of political headquarters of medical control.

1. Washington, D. C.

2. Various state capitols.

3. County seats, etc.

(e) Medical legislation fiat in practice of medicines:

1. Harrison law.

2. Volstead act.

3. Jones-Cooper Maternity Bill.

4. Sheppard-Towner Maternity Bill.

5. Venereal diseases control legislation.

(f) Unqualified admissions to license to practice:

1. Christian Science.

2. Chiropractors, osteopaths, etc.

3. Over-trained nurses.

(g) Attempted financial segregation:

1. Tendency of moneyed foundation to despotism in professional mandates.

2. Tendency to make use of free clinics and sociological measures as a playground for wealthy faddists at expense of poor and diseased citizenry.

(h) False premonitions as to self-preservation, i. e., primitive desire to get without giving—"Something for nothing."

At the risk of being considered an incurable optimist, let it be stated that prospects were never so bright. Awakening of the professional conscience to the wrongs that have been perpetrated against individual members and the mother science augurs that action that will follow will bring remedy. "Diagnosis is half the cure."

Respectfully submitted,

Charles J. Whalen, Editor.

REPORT OF THE HISTORIAN

Members of the House of Delegates:

The profession of Illinois has made such an auspicious beginning with the publication of Dr. Lucius Zeuch's Volume I of the Medical History of Illinois that it would seem unnecessary to call to the attention of Illinois physicians the necessity of preserving and conserving all items that may contribute to the preservation of the medical history of our state. Accurate data should be recorded by County Secretaries relative to the passing of pioneer physicians, the publication of books, special essays and monographs. Photographs, effigies of physicians; instruments and medical and surgical equipment; photographs of hospitals, infirmaries and special institutions of all sorts should be preserved. No single item of correspondence of physicians of the past relating to Illinois history or medical history of the community should suffer destruction. Case books, note books, account books—in fact all recorded data typifying the practice of medicine must be preserved. Of the numerous important Illinois physicians who have contributed to world medicine data is entirely inadequate and insufficient for future historians, and this report is presented to urge that a program of the conservation of historical material shall be inaugurated.

Cooperation on the part of the Illinois Historical Society has been assured. Considerable historical material has been gathered during the past year and much of it is of unusual value. The splendid collection of the

Chicago Society of Medical History has been turned over to the Chicago Historical Society for preservation. There the material will be classified and arranged and so organized as to be usable by medical profession and workers in the history of medicine.

Some new material has been gathered concerning Dr. John James of Upper Alton, Illinois. Dr. James was probably the most widely traveled man in the medical profession of Alton and vicinity. During the years 1817-1818-1819 he traveled and studied in Europe and on his return wrote a delightful and informative book entitled "Sketches of Travels in Italy, Sicily, and France." This was published in Albany, New York, in 1820. In 1836 with his brother Edwin—physician, botanist, surgeon and historiographer, of Major Stephen H. Long's exploring expedition to the Rocky Mountains—moved from Albany, New York, to the Mississippi Valley, John locating at Upper Alton and Edwin near Burlington, Iowa. The story of John James will be written in full as additional data are gathered, but it is important to note that he was associated with the medical department of Illinois College—the first school to inaugurate medical teaching within the state of Illinois—at its inception, serving as a member of the Board of Censors. From 1845 until the School closed in 1848 he was Professor of Medicine.

Considerable new data have also been gathered relative to the surgeons stationed at Fort Dearborn—this constituting a nucleus of a projected chapter on the services and contributions of early U. S. Army surgeons to the settlement of the western territory. The Medical Societies of Rock Island and Moline have graciously undertaken the marking of the last resting place of two early U. S. Army surgeons stationed at Fort Armstrong, Illinois, who lie buried there. These surgeons—John Gale and Richard Coleman—deserve more than passing notice from the profession of our now populous state. John Gale had served in the west from 1816 until the year of his death (1830) and Richard Coleman, earlier stationed at Fort Crawford (Prairie du Chien, Wis.), had been ordered to Fort Armstrong at the outbreak of the Black Hawk War, there to succumb to cholera which was epidemic during 1832 and which so demoralized the regular U. S. troops sent against Black Hawk and his warriors.

Too great credit cannot be accorded Dr. Lucius Zeuch for his painstaking efforts in behalf of the medical history of our state and the example which he has set bespeaks on the part of the present profession the heartiest cooperation and interest in the preservation of all types and forms of historical material.

Respectfully submitted,

Irving S. Cutter, M. D.,

Historian, Illinois State Medical Society.

COMMITTEE ON RELATION TO PUBLIC HEALTH ADMINISTRATION

No report.

COMMITTEE ON MEDICAL EDUCATION AND HOSPITALS

Dr. J. J. Pflock, Chicago: No business has been referred to our committee in the last year. We are all of the opinion that the Committee should be a very

important committee of the State Society and that cooperation should exist between the State Committee and the Hospital and Educational Committee of the American Medical Association. Considerable work could be referred to our Committee and its function could benefit hospitals in our state, which in our opinion is greatly needed.

The President: You have heard the reports of the Standing Committees, what is your pleasure?

Dr. Mather Pfeifferberger, Alton: I move that they be accepted. (Motion seconded by Dr. N. S. Davis, Chicago, and carried.)

The President: The next order of business is the appointment of a Resolutions Committee. On this Committee I shall appoint Drs. E. P. Sloan, Bloomington, Chairman; C. S. Skaags, East St. Louis, and E. H. Ochsner, Chicago. The Resolutions Committee will receive resolutions to be acted upon at the Thursday meeting.

The introduction of resolutions is now the order of business.

Dr. T. P. Foley, Chicago: I wish to present the following resolution:

1. *Procurement of Legislation to aid deserving disabled ex-service men and protect the interests of organized medicine.*

WHEREAS, many World War veterans are not receiving compensation although their cases are compensable, and

WHEREAS, a great many disabled World War veterans are not receiving adequate compensation, and

WHEREAS, Congress is attempting from time to time to pass legislation to relieve this condition.

WHEREAS, it is believed that the medical profession can render valuable service and assistance in the preparation of legislation that will be to the interest of ex-service men; and that such proposed legislation should be studied by the medical profession before final passage.

Resolved, by the House of Delegates of the Illinois State Medical Society that the Council undertake to make the needed contact with the American Legion through the Chicago Medical Post No. 216 and the State Medical officer, Department of Illinois, of the American Legion, necessary for cooperation in procuring legislation that will aid deserving disabled ex-service men and protect the interests of organized medicine.

Dr. W. S. Bougher, Chicago: I wish to present the following resolution:

2. *Amendment to Article IV of the Constitution.*

WHEREAS, no provision is made in the constitution of the Illinois State Medical Society for special recognition to those who have been members continuously and in good standing for a number of years, and

WHEREAS, numerous other organizations, medical organizations included, do make such provisions, therefore

Be it resolved, that Article IV of the constitution of the Illinois State Medical Society be amended as follows:

Section 1. After the word "Members" in the first line of Section 1 add the words "Emeritus Members," making Section 1 of Article IV read as follows:

Section 1: This Society shall consist of Members, Emeritus Members, Honorary Members and Guests.

New Section: After Section 2 there shall be inserted the following:

Section 3: *Members Emeritus.* Members who have been in good standing for thirty-five years and have reached the age of seventy years may on recommendation of his component society be made a "Member Emeritus" and have all the rights and privileges of members without payment of dues to the Component Society or the State Society.

Section 3 shall be numbered Section 4.

Section 4 shall be numbered Section 5.

Dr. E. P. Sloan, Bloomington: I wish to present the following resolution:

3. *Interpretation of Section 7, Chapter II of Principles of Ethics of the American Medical Association.*

WHEREAS, Section 7, Chapter II of the principles of the American Medical Association provides that "All questions affecting the professional reputation or standing of a member or members of the medical profession should be considered only before proper medical tribunals in executive sessions or by special or duly appointed committees on ethical relations."

Therefore be it resolved, that a proper interpretation of Section 7 of Chapter II of the principles of Ethics of the American Medical Association makes unethical the presentation to a layman or to the laity of a matter in contro-

versy between members of the profession, and that this rule applies to organizations or groups, the same as it applies to a member or members of the medical profession.

Dr. H. J. Way, Chicago: I have been asked to present the following resolution:

4. *Limitation of the term, industrial disease, to conditions definitely known to be due to occupations.*

WHEREAS, there is a proposed bill before the Legislature to revise the Illinois Workmen's Compensation Law which includes under the term industrial diseases, all diseases whatsoever arising out of and in the course of employment; and inasmuch as this might be made a wedge for state medicine, and the proponents of the bill have agreed to accept a substitute amendment naming certain specific substances which may produce definite occupational disease, therefore

Be it resolved, that the Illinois State Medical Society go on record as endorsing the limitation of the term industrial disease to those conditions definitely known to be due to occupations and to give such aid as is consistent in furthering a proper substitute amendment.

Dr. H. M. Camp, Monmouth: I wish to present the following resolutions:

5. *Amendment to Section 5, Chapter XI of By-Laws.*

Be it resolved, that Chapter XI, Section 5 of the By-Laws be revised to read "The Fiscal year of this Society shall be from May 1 to April 30," "Inclusive"; and eliminate from Chapter VII, Section 4, the following words, "With a supplementary report from January 1 to May 1." "Inclusive."

6. *Amendment to Section 1, Article VI of the Constitution.* (Introduced by the Council of the Chicago Medical Society.)

WHEREAS, the constitution of the Illinois State Medical Society provides, in Article VI, Section 1: ". . . The Council shall consist of twelve Councilors, elected by the House of Delegates, and the President and Secretary ex-officio;" and the By-Laws, Chapter V, Section 7, state: "It (The House of Delegates) shall divide the State into Districts, specifying what counties each District shall include," and delegating to this Council duties of vast and comprehensive importance to the Society and its individual members; and

WHEREAS, as at present districted, the mem-

bership living in the various Districts is as follows (See Report of Secretary, April 30, 1930):

First	498
Second	259
Fourth	383
Fifth	266
Sixth	324
Seventh	270
Eighth	380
Ninth	220
Tenth	257
Third	4612

Consisting of:.

Lake	74
Cook	4249
DuPage	41
Kendall	0
Will-Grundy	165
Kankakee	83

which shows that in the Third District there is one Councilor for every 1528 members, whereas in the other nine Districts there is one Councilor for every 312 members; and

WHEREAS, the districting for the Council, as at present constituted, is entirely inconsistent with the principle of equal representation, and allows the nine Districts, usually referred to as the Down-State Districts, power, influence and voice in the affairs of this Society far out of proportion to their numerical strength and the amount of funds from dues paid into the Society, as compared with the Third District; and

WHEREAS, the Council of the Illinois State Medical Society had at its disposal, according to the Treasurer's report of April 30, 1930, the large sum of \$166,544.49, which includes \$37,992.00 dues from the Cook County Medical Society; therefore be it

Resolved, that the House of Delegates of the Illinois State Medical Society be advised of this inequality of representation in the affairs of the Society, and be requested by this resolution of the Council of the Cook County Medical Society to rectify this palpable injustice.

To replace Section 1, Article VI by a new section to read as follows:

"Amendment to Section 1, Article VI, of the constitution of the Illinois State Medical Society. New Section 1 to read as follows:

Section 1: The Board of Trustees, or, as in this constitution and by-laws designated, the

Council, shall consist of the President and Secretary, ex-officio, and eighteen Councilors, elected by the House of Delegates; at least nine of the Councilors shall be elected from the members of the Lake, Cook, DuPage, Kendall, Grundy, Will and Kankakee County Medical Societies. Besides its duties mentioned in the By-Laws, it shall have charge of and control of all of the property of this Society of whatsoever nature and of all funds from whatsoever source."

The President: These resolutions are referred to the Resolutions Committee.

On motion duly made and seconded the House adjourned at 4:45 P. M., to meet again on Thursday morning at 8:30 A. M.

SECOND SESSION

Thursday Morning, May 7, 1931

The Thursday morning session was called to order at 9:01 A. M. by the President, Dr. W. D. Chapman.

The President: The first order of business will be the report of the Credentials Committee.

Dr. Charles D. Center: As a supplementary report to the one made the day before yesterday, since then six additional delegates from down-state have been certified, making 34, and three from the Chicago Medical Society, making 48, a grand total of 112.

(Dr. Van Derslice moved that the report be adopted. Motion seconded and carried.)

The President: The next order of business is the roll-call by the Secretary.

The Secretary called the roll and reported that a quorum was present, 51 down state, 44 Chicago Medical Society, 12 members of the Council, a total of 107.

The President: You have heard the roll call, a quorum is present, 107 accredited delegates. The House is duly constituted for business.

The first order of business is the election of officers. Nominations for President-Elect are in order.

Dr. S. E. Munson, Springfield: I wish to place in nomination for President-Elect the name of Dr. John A. Neal, Springfield. (Nomination seconded by Dr. J. W. Van Derslice, Chicago, and Dr. T. P. Foley, Chicago.)

Dr. R. J. Coultas, Mattoon: I move that the nominations be closed and that the Secretary be instructed to cast the affirmative ballot for Dr. John R. Neal for President-Elect. (Motion was

seconded and carried. The ballot was cast and the President declared Dr. Neal elected.)

Dr. John R. Neal: I deeply appreciate the honor you have conferred upon me. During my year I agree to keep the faith. I owe you my thanks and I sincerely thank you.

The President: Nominations for first Vice-President are in order.

Dr. G. C. Otrich, Belleville: I wish to place in nomination the name of Dr. I. L. Foulon, East St. Louis.

Dr. J. W. Van Derslice, Chicago: I move that the nominations be closed and the Secretary cast the affirmative ballot for Dr. I. L. Foulon for first Vice-President. (Motion seconded by several and carried.)

(The Secretary cast the ballot and the President declared Dr. Foulon elected.)

The President: Nominations are now in order for second Vice-President.

Dr. John R. Harger, Chicago: Before making the nomination I would like to make some explanation of why I make the nomination. As Chairman of the Council of the Chicago Medical Society we have elected delegates to this Illinois State Medical Society and have instructed these delegates for certain things. It has been my duty in the past year to preside at the Council of the Chicago Medical Society which has to do with all the business of the organization, including the election of delegates to the Illinois State Medical Society. Our constitution and by-laws provides that they be elected at a certain time and that before they come to the meeting that they be instructed. We had a meeting of the delegates after our last Council meeting in Chicago and certain policies and principles were laid down as our constitution provides for.

At this time I want to place in nomination for second Vice-President of this organization the name of Dr. W. S. Bougher, Chicago. (Nomination seconded.)

Dr. J. S. Nagel, Chicago: I move that the nominations be closed and the Secretary cast the affirmative ballot for Dr. Bougher. (Motion seconded by Dr. Charles D. Center, Quincy, and carried.)

(The Secretary cast the ballot and the President declared Dr. Bougher elected.)

The President: Nominations are now in order for Secretary.

Dr. Mather Pfeiffenberger, Alton: I would

like to place in nomination the name of Dr. Harold M. Camp to succeed himself. (Nomination seconded.)

Dr. O. W. Rest, Chicago: I move that the nominations be closed and the President cast the affirmative ballot for Dr. Camp for Secretary. (Motion seconded and carried.)

(The President cast the ballot and declared Dr. Camp elected.)

The President: Nominations are now in order for Treasurer.

Dr. W. E. Kittler, Rochelle: I would like to place in nomination the name of Dr. A. J. Markley to succeed himself. (Nomination seconded.)

Dr. E. E. Perisho, Streator: I move the nominations be closed and the Secretary cast the affirmative ballot for Dr. Markley for Treasurer. (Motion seconded and carried.)

(The Secretary cast the ballot and the President declared Dr. Markley elected.)

The President: Nominations are now in order for Councilor for the Third District, the term of Dr. John S. Nagel expiring.

Dr. J. W. Van Derslice, Chicago: I take very great pleasure in placing in nomination the name of Dr. John S. Nagel who has served this Society so faithfully for the last few years. (Nomination seconded.)

Dr. J. F. Hultgen, Chicago: I would like to place in nomination for Councilor of the Third District the name of Dr. Frank P. Hammond, according to instructions given us by the Chicago Medical Society.

(It was moved and seconded that the nominations be closed and that the House ballot on the two candidates. Motion carried.)

The President: If there are no other nominations we will proceed to ballot by the Australian ballot. Dr. C. F. Newcomb, Champaign, and Dr. Charles D. Center, Quincy, will serve as tellers. The delegates will please remain in their seats. People not delegates will please retire to the end of the room, sufficiently segregated that the tellers will meet with no confusion. During the balloting the tellers will serve as sergeants-at-arms. There are 110 accredited delegates, 107 seated at the first announcement and three who came in later.

(The balloting proceeded according to the Australian system.)

The President: One hundred eight votes have been cast. Dr. Nagel has received 71 and Dr.

Hammond 37. I declare Dr. Nagel elected as Councilor of the Third District.

The President: The Chair will entertain nominations for Councilor of the Fourth District.

Dr. R. L. Greene, Peoria: I want to place in nomination the name of Dr. E. P. Coleman to succeed himself. (Nomination seconded.)

Dr. E. E. Davis, Avon: I move that the nominations be closed and the Secretary cast the affirmative ballot for Dr. Coleman. (Motion seconded and carried.)

(The Secretary cast the ballot and the President declared Dr. Coleman elected.)

The President: Nominations are in order for Councilor of the Fifth District.

Dr. C. S. Nelson, Springfield: I wish to place in nomination the name of Dr. S. E. Munson, Springfield to succeed himself. (Nomination seconded.)

Dr. G. H. Weber, Peoria: I move that the nominations be closed and the Secretary cast the affirmative ballot for Dr. Munson. (Motion seconded and carried.)

(The Secretary cast the ballot and the President declared Dr. Munson elected.)

The President: Nominations are in order for Councilor of the Seventh District.

Dr. E. H. Weld, Rockford: I wish to place in nomination the name of Dr. I. H. Neece to succeed himself. (Seconded by Dr. J. W. Van Derslice, Chicago.)

Dr. R. L. Greene, Peoria: I move that the nominations be closed and the Secretary cast the affirmative ballot for Dr. Neece. (Motion seconded and carried.)

(The Secretary cast the ballot and the President declared Dr. Neece elected.)

The President: We shall proceed to the election of the Standing Committee; the Public Policy Committee, three to be elected.

(Nominations were presented in each case, and the Secretary instructed to cast the affirmative ballot and the President declared them elected.)

The following Committees were elected:

Public Policy: George Michell, Peoria; Frederick H. Mueller, Chicago; H. J. Way, Chicago.

Medical Legislation: John R. Neal, Springfield, Chairman; Thomas P. Foley, Chicago; Edward Bowe, Jacksonville.

Medico-Legal: Two members elected; R. O. Hawthorne, Monticello; A. H. Geiger, Chicago.

Relations to Public Health Administration: Gottfried Koehler, Chicago; Ralph Hinton, Elgin; E. D. Levisohn, Chicago; F. F. Maple, Chicago; T. B. Knox, Quincy.

Medical Education and Hospitals: John J. Pflock, Chicago; W. M. Hartman, Macomb; W. R. Marshall, Clinton.

The President: The next order of business is the election of a permanent historian.

Dr. C. J. Whalen, Chicago: I wish to nominate Dr. I. S. Cutter to succeed himself (Nomination seconded.)

Dr. Mather Pfeifferberger, Alton: I move that the nominations be closed and the Secretary instructed to cast the affirmative ballot for Dr. Cutter. (Seconded by Dr. P. J. McDermott, Kewanee, and carried.)

(The Secretary cast the ballot and the President declared Dr. Cutter elected.)

The President: The next order of business will be the election of delegates to the American Medical Association.

Dr. Edward H. Ochsner, Chicago: As per instructions of the Council of the Chicago Medical Society I take great pleasure in nominating our recent past president, Dr. F. O. Fredrickson as a delegate. In connection with this I owe this House an explanation. The Council of the Chicago Medical Society at its May meeting and according to its constitution directed the delegates from Chicago to nominate and do all in their power to elect Dr. Fredrickson for this position. Dr. Fredrickson as retiring president last year and according to the custom of the House of Delegates was entitled to be elected last year. We are trying to correct what was not done last year. I wish to say, gentlemen, that in 1901 I was present at a state meeting at which there was an agreement reached by all that each section of the state should determine who should represent them. I think the Council of the Chicago Medical Society by a vote of 37 to 16 sustained this nomination. I think, gentlemen, it would be a very serious thing for the future of medicine in the State of Illinois if this gentlemen's agreement that was reached in 1901 should be broken at this time. I implore you gentlemen of the State Medical Society representing that section of the state outside of Chicago not to repudiate that gentlemen's agreement at this time. I ask you to vote for Dr. F. O. Fredrickson as delegate to the American Medical Association.

ation and as the candidate supported by the Chicago Medical Society.

Dr. G. Henry Mundt, Chicago: I would like to place in nomination the name of Dr. Charles E. Humiston to succeed himself.

Dr. John S. Nagel, Chicago: I wish to place in nomination the name of Dr. J. W. Van Derslice to succeed himself.

Dr. E. P. Coleman, Canton: I would like to place in nomination the name of Dr. Mather Pfeiffenberger to succeed himself.

Dr. George Weber, Peoria: I would like to place in nomination the name of Dr. R. L. Greene, Peoria, to succeed himself.

Dr. G. C. Otrich, Belleville: I would like to place in nomination the name of Dr. C. S. Skaggs to succeed himself.

Dr. John R. Harger, Chicago: In behalf of the delegation from the Chicago Medical Society I wish to second the nomination of Dr. C. E. Humiston.

The President: A second is not necessary.

Dr. J. W. Van Derslice, Chicago: I move that the nominations be closed. (Motion seconded by Dr. W. E. Kittler and carried.)

Dr. J. W. Van Derslice, Chicago: I move that the Secretary cast the affirmative ballot of this House for the three downstate nominees, Drs. Greene, Skaggs and Pfeiffenberger. (Motion was seconded and carried.)

(The Secretary cast the ballot and the President declared Drs. Greene, Skaggs and Pfeiffenberger elected as Delegates to the American Medical Association.)

The President: We shall proceed to ballot on the remaining nominees for delegates, Drs. Fredrickson, Humiston and Van Derslice, two to be elected. The tellers will pass the ballots. We are voting on two of the three; the high man will be elected; the second high man will be elected; the low man will not be elected. There are three candidates with two positions to be filled.

(The balloting proceeded according to the Australian system.)

The President: The tellers report that the total vote balances within the number of the House. The Secretary will announce the result.

The Secretary: Dr. Van Derslice received 89 votes, Dr. Humiston 65, and Dr. Fredrickson 51.

The President: The Chair declares Dr. Van Derslice and Dr. Humiston elected.

The next order of business will be the election of alternate delegates. There is a hold-over alternate delegate from last year. The Secretary will explain to you.

The Secretary: Last year we had five vacancies as alternate delegates to the American Medical Association. Dr. J. J. Pflock was a hold-over alternate for Dr. Humiston and was elected as alternate to Dr. Pusey. When we certified the delegates to the American Medical Association, we found we were entitled to ten alternate delegates. Having only nine, Dr. Davis was reported as a hold-over for Dr. Pusey because his successor was not selected last year. On our program here we have Dr. Davis elected for 1932; that is an error. It was put in to balance the list of delegates and alternates. Dr. Davis' term expires and he will not be certified unless re-elected.

The President: There are five to be elected for two years and one for one year.

Dr. I. F. Harter, Stronghurst: I wish to place in nomination the name of Dr. E. P. Coleman, Canton.

Dr. I. H. Neege, Decatur: I would like to place in nomination the name of Dr. E. H. Weld, Rockford, as alternate for Dr. Skaggs.

Dr. Walter R. Fisher, Chicago: Having been instructed by the Council of the Chicago Medical Society, I hereby nominate Dr. George Lucas for alternate delegate.

Dr. T. P. Foley, Chicago: I place in nomination Dr. Frank L. Brown as alternate for Dr. Van Derslice.

Dr. R. H. Hayes, Chicago: I wish to place in nomination Dr. I. S. Cutter as alternate for Dr. Van Derslice.

I would also place in nomination Dr. N. S. Davis to succeed himself for one year.

Dr. Mather Pfeiffenberger, Alton: I am uninstructed; I would like to place in nomination Dr. Andy Hall as alternate to Dr. Pfeiffenberger to succeed himself.

Dr. Edward H. Ochsner, Chicago: I move that the nominations be closed for the one year term and for the down state alternates and that the Secretary be instructed to cast the affirmative ballot for these. (Motion seconded and carried.)

(The Secretary cast the ballot and the President declared Dr. N. S. Davis elected for one

year, and Drs. Coleman, Weld and Hall elected as alternates from downstate for two years.)

The President: We have remaining in nomination for alternate delegates three nominees, Drs. Lucas, Brown and Cutter, for two positions. We shall proceed to ballot. The two men receiving the highest number of votes will be elected. The man receiving the lowest number of votes will not be elected.

(The balloting was proceeded with.)

The President: The count of the tellers is delivered; the vote is within the limit of the House. Dr. Cutter received 74 votes, Dr. Brown 66 and Dr. Lucas 35. I declare Drs. Cutter and Brown elected.

This completes the election of officers. The next order of business is fixing the per capita tax for the coming year.

The Secretary: The per capita tax has been \$8.00 per year. The Secretary in his report which was approved by the Council has recommended that the per capita tax be \$7.00 per year.

Dr. P. J. McDermott, Kewanee: I move that the per capita tax be \$7.00 per year. (Motion seconded by Dr. Templeton and carried.)

The President: I want to say at this time that Illinois is especially fortunate in the matter of management and conduct of expenses. A great many men in this House I suspect do not know that the Los Angeles County Medical Society has an initiation charge of \$100.00 before they begin to pay dues.

Dr. John R. Harger, Chicago: May I ask is this per capita tax retroactive to January first of this year?

The President: Nothing this House does can be retroactive; 1932 was the year I specified.

The next order of business is the selection of a meeting place for next year.

Dr. J. W. Kelly, Springfield: We want to extend an invitation to the Society to come to Springfield next year.

Dr. P. J. McDermott, Kewanee: I move that the vote of preference be given to Springfield. (Motion seconded and carried.)

The President: There was a bit of unfinished business not reported at the first meeting. The case of Dr. L. E. Schmidt of Chicago was acted upon by the Judicial Council and this House should know that its action was sustained by the Judicial Council.

The President: We now come to new business.

Dr. E. E. Davis, Avon: I ask the privilege of the floor for a limited time for Dr. J. C. Stone of Oneida, Knox County.

The President: Dr. Stone may have the floor for ten minutes.

Dr. J. C. Stone, Oneida: We physicians in Knox County are in a position in which we need your help. We simply cannot extricate ourselves. We have been down here several days and we have talked to as many as possible. We have found that our problem is capable of solution but not by the members in Knox County. We think what we need is arbitration, I would say more than that, compulsory arbitration. What I mean by that, is that you appoint a committee from the House of Delegates and authorize them to go over the matter and the physicians of the county will agree to abide by their decision. It is time now when the State Society ought not to let this Society go. That is practically the only thing that is left to do. We would suggest that Dr. Chapman, who was our Councilor for years, Dr. E. P. Sloan as delegate to the American Medical Association, and Dr. Whalen, all of them known to us, come over to Knox County, talk over the case again, ascertain if every man in Knox County has had opportunity to express his opinion regarding the formation of a society, and then organize a society of physicians who are willing to do that.

Dr. J. W. Van Derslice, Chicago: I move that such a Committee be appointed and the Council be requested to supply the funds for carrying out the work of that Committee. (Motion seconded by several.)

Dr. E. P. Sloan, Bloomington: I rise to a point of order. Before this House votes to do this, we should remember that the Council should be asked to appoint such a committee because it is a matter, according to our by-laws and constitution, that is in the hands of the Council.

Dr. Van Derslice: I accept with apology the suggestion of Dr. Sloan that this be a recommendation to the Council. The wording is acceptable. (The motion as amended is carried.)

The President: The matter is referred to the Council with the recommendation of this House.

Dr. C. S. Nelson, Springfield: Do I under-

stand that the Council will be in duty bound to follow the recommendation?

The President: This involves the expenditure of money, therefore it is a matter for the Council.

Dr. C. S. Nelson: In Chapter VIII, Section 3 of the By-Laws it says, "The Council shall be the board of censors of the Society. It shall consider all questions involving the rights and standing of members, whether in relation to other members, to the component societies or to this Society. All questions of an ethical nature before the House of Delegates or the General meetings may be referred to the Council without discussion. It shall hear and decide all questions of discipline affecting the conduct of members or component societies on which an appeal is taken from the decision of an individual Councilor. An appeal from the decision of the Council may be taken to the House of Delegates."

The President. That clause has reference to matters of discipline and has reference to charges preferred against a member in which an appeal is taken to the Council by the aggrieved member.

Dr. C. S. Nelson: It has no provision of appeal for other matters?

The President: Not in matters of repealing or issuing of charters.

Dr. Cleaves Bennett, Champaign: If the members of the House of Delegates will look over carefully the constitution of the two organizations under which we have functioned, they will find that an appeal, if this is considered as an appeal of the Knox County case, goes to the Judicial Council of the American Medical Association, as far as the action of this Council is concerned.

The President: That is right. That county had a perfect right to appeal to the Judicial Council.

Dr. Cleaves Bennett: This is merely a recommendation to the Council.

Dr. J. W. Hamilton, Mt. Vernon: We have been over this matter as conscientiously as any men could go over anything, giving all sides an equal opportunity. As a Council we want Knox County back with us. If they appoint a committee to instruct us to accept their plan what guarantee will Knox County give that it will abide by our decision?

The President: For the information of Dr.

Hamilton, I might state that the Council has jurisdiction absolutely over any committee. Any committee could appear before the Council and make recommendation but they cannot force the Council to act.

The next order of business is the matter of resolutions.

1. *Resolution of sympathy to Dr. R. R. Ferguson.*

Be it resolved that the delegates of the Illinois State Medical Society extend their deep sympathy to President-Elect Dr. R. R. Ferguson in his recent illness and regret that he is unable to be present with them at this meeting. They hope for his speedy and complete recovery. The Secretary is hereby requested to convey the sentiments expressed in this resolution to Dr. Ferguson.

Dr. E. P. Sloan, Bloomington: I move that the resolution be adopted. (Motion seconded and carried.)

2. *Amendment to Article IV of the Constitution.* (See Page 29.)

Dr. Sloan: I move the adoption of the amendment to the by-laws. (Motion seconded.)

The President: You have heard the reading of the amendment which was read at the Tuesday's meeting. It is moved and seconded that it be adopted. (Motion carried.)

3. *Amendment to Section 5, Chapter XI of By-Laws.* (See Page 29.)

Dr. Sloan: Your Committee moves the adoption of the amendment. (Motion seconded.)

The President: This amendment was read before the last session of the House. It is moved and seconded that it be adopted. (Motion carried.)

4. *Interpretation of Section 7, Chapter II, of Principles of Ethics of the American Medical Association.* (See Page 29.)

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

5. *Procurements of legislation to aid deserving disabled ex-service men and protect the interests of organized medicine.* (See Page 28.)

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

6. *Limitation of the term, industrial diseases, to conditions definitely known to be due to occupations.* (See Page 29.)

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

7. *Undulant Fever.*

WHEREAS, As there is a widespread interest in the subject of undulant fever, therefore

Be it resolved, That the House of Delegates of the Illinois State Medical Society urge the profession of the state to do all it can to stimulate study and recognition of the disease.

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

8. *Knox County.*

WHEREAS, The Council of the Illinois State Medical Society has revoked the charter of the Knox County Medical Society and has the problem of readjustment of conditions in that county now on their hands.

Resolved, That the other component societies of the Illinois State Medical Society be requested to refrain from accepting applications for membership from physicians residing in Knox County until said situation has been adjusted by the Council of the Illinois State Medical Society.

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

9. *Amendment to Section 1, Article VI of the Constitution.* (See Page 29.)

Dr. Sloan: This resolution was sent down by the Council of the Chicago Medical Society and signed by the Secretary.

Your Committee cannot recommend the adoption of this resolution to amend the constitution and by-laws as presented. The reasons advanced for its adoption are:

That the work entailed in the proper supervision of the branch societies of the Chicago Medical Society and of the component societies in the other five counties, representing 4,612 members of organized medicine, is too great for three Councilors to take care of efficiently. Recognizing the fact that the efficiency of medical organization in this district is dependent in great measure upon the work of the Councilors, we recommend that the question of the advisability of redistricting the third councilor district be referred to the Council for investigation.

The Committee moves that this recommendation be sent to the Council and that the resolution be not adopted. (Motion seconded by several and carried.)

10. *Resolution of Appreciation and Thanks.*

WHEREAS, The St. Clair County Medical Society ably assisted by the Southern Illinois Medical Society, the Medical Women's Club of East St. Louis, the Chamber of Commerce, the Shriners, the Knights of Columbus and the Catholic Community House, have provided a most satisfactory auditorium for the general sessions, ideal halls for the section meetings and generous space for the exhibits.

WHEREAS, Our hosts, the members of the St. Clair County Medical Society, the members of the Medical Women's Club, the city officers and the citizens of East St. Louis have extended to us a most cordial welcome and generous southern hospitality, taking care of us, and entertaining in a way that cannot be excelled.

WHEREAS, The hotel accommodations have been ample, really satisfactory and at reasonable rates, therefore

Be it resolved, That the Secretary of the Illinois State Medical Society be hereby instructed to convey our appreciation and thanks by letter to each one of the above named organizations and to the Mayor of East St. Louis.

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

11. *George Washington Bicentennial.*

WHEREAS, The Congress of the United States has created a Commission to arrange a fitting nation-wide observance of the Two Hundredth Anniversary of the Birth of George Washington in 1932, and

WHEREAS, The Commission so created, composed of the President of the United States, the Vice-President of the United States, the Speaker of the House of Representatives, four members of the United States Senate, four members of the House of Representatives, and eight citizens appointed by the President of the United States, is charged with the duty of planning and directing the celebration, and

WHEREAS, The high purpose of the event is to commemorate the life, character and achievements of the most illustrious citizen of our Republic and to give every man, woman and child living under the Stars and Stripes an opportunity to take part in the celebration which will be outstanding in the world's history, and

WHEREAS, The George Washington Bicentennial Commission, desiring the full cooperation of the people in the United States has extended

a most cordial and urgent invitation to our organization to participate in the celebration, therefore be it

Resolved, That the Illinois State Medical Society does hereby endorse the program of observance of the Two Hundredth Anniversary of the Birth of George Washington, to take place in 1932; accept with appreciation the invitation of the George Washington Bicentennial Commission, and pledge this organization to extend earnest cooperation to the United States Commission in all possible ways, so that future generations of American citizens may be inspired to live according to the example and precepts of Washington's exalted life and character, and thus perpetuate the American Republic, and be it further

Resolved, That this resolution be incorporated in the official proceedings of this meeting and that a copy thereof be transmitted to the George Washington Bicentennial Commission, Washington, D. C.

Dr. Sloan: I move the adoption of the resolution. (Motion seconded and carried.)

Dr. Sloan: Either last year or the year before the Society passed a resolution instructing the delegates to the American Medical Association to work for the extension of the hospital standardization program of the American Medical Association, with the idea that it will finally take over the standardization program of hospitals. That resolution expressly stated the hospital standardization organization of the American Medical Association and that we should urge them to extend this standardization program so as to embrace all small hospitals as well as large. In that resolution you stated that the American Medical Association is the proper organization for standardizing hospitals all over the country. That resolution was passed unanimously in the American Medical Association without opposition. The American Medical Association elected one of our members to be the Chairman of the Council on Medical Education and Hospital, which has this standardization program, a year ago. Our member has been on that Commission a year. I would like to hear from him. I would like to suggest that we call on Dr. Humiston to tell us what has been done. I believe the Chairman should limit him in time.

The President: Dr. Humiston, will you address the House.

Dr. Charles E. Humiston, Chicago: I wonder if the magnitude of the task that I have been led to undertake appeals to everyone. There are 7,000 hospitals in the United States. The American Medical Association has no authority over any of them, just advice. These hospitals scattered over the United States constitute a task which the American Medical Association rightfully should undertake. There are just one or two facts that I think you ought to remember. The endowed hospitals in the United States dating back to the beginning of the country are nearly all in the east and in the great centers of population, a very few elsewhere. The policy of these endowed hospitals has been dominated by tradition. If all the incomes from endowments were made available for all patients in the United States, the amount of funds available would be eight cents a day per patient. The eight cent a day institutions should not continue to dominate. The people who sustain hospitals are the doctors and the treatment of patients within their walls should be dominated by the medical profession. One organization country-wide has this in its regulations that no doctor on the staff, consulting or regular, shall have a position on the board of trustees or shall be present at their meetings except when invited in. That is wrong. The trend of matters is well represented in an editorial in the *Journal of the American Medical Association*, March 28, 1931, which did not escape the eagle eye of the editor of the *ILLINOIS MEDICAL JOURNAL*, something you ought to read.

The small hospitals, some 2,300 of them, must of course conform to some sort of standard. The problem is immense. The Council meets only a few times a year. The action of the Council is somewhat slow. You will be agreeably surprised as time goes on. The Council is 100 per cent. for the man who treats the sick. I think that is about the best thing I can say.

Dr. Sloan: I move that this House of Delegates by a rising vote at this time express our appreciation and thanks to the President that we have had during the last year for his service during perhaps the most arduous year that this Society has gone through. I believe it is due him. (Motion seconded and carried by a rising vote.)

The President: I thank you sincerely.

We now come to a part of our program that has caused me considerable thought, worry and regret. All during this meeting I have missed our friend Ferguson. It is my duty to induct into office R. R. Ferguson. With the permission of this House I shall continue the function of this House to the extent of going to Chicago, finding Dr. Ferguson and conferring upon him his charge of office, with the information that it is my very very great pleasure to confer the badge of office upon a man who is thoroughly able and competent to conduct the affairs of the Illinois State Medical Society in a fashion which will make for the integrity and continued usefulness of the Society. I have every confidence that Dr. Ferguson through his term of office will work for the good of the medical profession and that the Society has made no mistake in choosing him to carry on the duties which go to that office. With the permission of the House, I shall go to Chicago and induct him into office as President of the Illinois State Medical Society.

The Secretary has some communications.

The Secretary: I have had quite a number of letters from the two cities desiring to entertain the American Medical Association next year, New Orleans and Memphis. I believe the Secretary of the American Medical Association has investigated both cities and the facilities are adequate.

Dr. W. E. Kittler, Rochelle: I move that it be left to the delegates. (Motion seconded and carried.)

The Secretary: We have had a number of letters from Dr. W. C. Woodward of the Bureau of Legislation of the American Medical Association, urging the Illinois State Medical Society to assure the government of our cooperation in the sale of narcotics.

Dr. Sloan: I move that the matter be referred to the Council with power to act. (Motion seconded and carried.)

The Secretary: I have had a number of invitations for the 1932 meeting. I also have a letter from Dr. Frank J. Otis of Moline, reading as follows:

In the Calhoun County (Mich.) Medical Society Bulletin I recently read an article on resolutions passed by the Michigan State Medical Society. I am herewith quoting part of them.

"Resolved, that physicians charge a fee of not less than \$2.00 to Old Line Life Insurance Companies for rendering special reports of the health and physical condition of prospective applicants for insurance, etc. . . ." that these Old Line Insurance Companies apparently are cooperating. To date only one complaint has been received, in which there was refusal to pay for filling out a claim."

"Resolved, that physicians charge a fee of not less than \$2.00 for each preliminary and final claim proof, etc. . . ." has received considerable comment from physicians throughout the State. Several cases are on record in the chairman's office, in which the insurance companies have refused to honor statements of physicians for services rendered within the meaning of the resolution. Correspondence from insurance companies indicates that they do not intend to consider the physician in this matter. The resolution apparently is weak and does not contain an alternative for the physician to resort to in case of the insurance company refusing payment."

"Your committee suggests that physicians refuse to fill out blanks for health and accident insurance companies unless payment is guaranteed to the physician by the insurance company, either direct or through the claimant, before the report is filled out."

"Your committee further recommends that an ultimatum be delivered to each insurance company that the members of the Michigan State Medical Society refuse to fill out insurance blanks unless payment for such services in the original contract or policy, which is issued to the claimant, and so advise him at the time it is purchased. The committee therefore makes this recommendation and asks that, if adopted they be authorized to notify all insurance companies in accordance with the following resolutions:

"WHEREAS, the Michigan State Medical Society passed a resolution, at its meeting in Jackson, Michigan, September 17, 1929, regarding the filling out of claim proofs of Health and Accident Insurance Companies, and

"WHEREAS, the responsibility for the payment of a fee to the physician for such services was placed upon the insurance company,

"WHEREAS, it was resolved that such fee be not less than \$2.00 for each preliminary and final claim proof, the fee to be increased according to the type of service rendered, and

"WHEREAS, since the adoption of this resolution the majority of Health and Accident Insurance Companies have disputed their responsibility to pay the physician, therefore

"Be it resolved, that physicians refuse to fill out blanks for any insurance company unless payment is guaranteed to the physician by the insurance company either direct or through the claimant, before the report is filled out,

"Further, that the home office of each insurance company be notified that the members of the Michigan State Medical Society have adopted this resolution.

"Members, when filling out a blank after receiving

a fee, should not answer any of the following questions:

"For what diseases have you attended the patient?"

"Has he ever had tuberculosis?"

"Have any relatives died of tuberculosis or heart disease?"

"What is his present physical condition?"

"If you answer these questions you impart 'confidential information' and become liable for damages through suit by the patient or his estate. Within the year several doctors have been sued and judgments rendered against them for having imparted this confidential information to insurance companies. A release will not protect you in court. You are warned to be careful in the answers you give."

I have given you this matter at length, but felt it would thus be more clear to you. Has any resolution been passed, or has this matter been considered by the Illinois Medical Association?

(Signed) F. J. OTIS.

The President: In opening the matter for discussion, I would wish the House to bear in mind that any action it desires to take would be advisory only. I am in sympathy with the tone of the letter.

Dr. Cleaves Bennett, Champaign: After hearing that and after some contact with insurance companies, I move that the communication be received and placed on file. (Motion seconded.)

Dr. W. E. Kittler, Rochelle: I would like to amend the motion, that the letter be referred to the Council for investigation. (Amendment seconded and accepted by the maker and seconder of the motion.) (Motion as amended carried.)

On motion duly made and seconded the House of Delegates adjourned *sine die* at 11:20 A. M.

Correspondence

REORGANIZATION OF COOK COUNTY HOSPITAL

Chicago, Ill., May 28, 1931.

To the Editor: In view of the nation widespread publicity given in our *Bulletin*, THE ILLINOIS MEDICAL JOURNAL, but mainly in the lay press, of a reorganization of the Cook County Hospital staff, suggested by a certain group and without reference to a plan originated by the attending staff, it is respectfully requested that the follow-

ing communication be published in an early issue of THE ILLINOIS MEDICAL JOURNAL.

FREDERICK TICE, M. D.,
President of the attending staff
Cook County Hospital.

SUGGESTIONS FOR STAFF REORGANIZATION OF COOK COUNTY HOSPITAL

For many years the Cook County Hospital has been improving its facilities for undergraduate and post-graduate teaching. This is a desirable trend and further progress should be fostered. That this institution harbors a wealth of clinical patients for this purpose is apparent to everyone.

I believe that it should be the desire of all parties interested to bring about an arrangement which will make possible the utilization of this vast material for study in a manner which will insure better care of the sick of this institution and at the same time afford teaching facilities which will keep it one of the outstanding centers of medical education.

Cook County Hospital is one of a number of institutions maintained by the taxpayers of Cook County for the care and treatment of the sick and injured who are financially unable to provide such care and treatment for themselves.

It is conducted under the direction of the Board of County Commissioners, who in turn are responsible to the Electorate of Cook County for its proper economic, scientific and political management. It, therefore, becomes necessary to at once recognize that whatever plan or plans are contemplated, they must in no way assume that the responsibility for the proper conduct of this institution can in any way be delegated to any other body than the Board of County Commissioners and that in accepting any plan the Board must do so, knowing that theirs is the responsibility to see that any plan made serves the purpose for which this hospital was founded and is being maintained.

Growth of Cook County Hospital. The rapid growth of Cook County Hospital from one of a few hundred beds to its present capacity of some 3,000 beds at once makes apparent the necessity of providing a very large staff of highly trained men to care for its patients. It must further be borne in mind that this staff must serve without any compensation whatever. The hardship that this sacrifice of time has meant to the physicians of Chicago, who have for several decades furnished this service is known to very few of the lay people and barely recognized by the profession.

The rapid growth of the institution has heaped added burdens upon the staff and demanded more and more time and sacrifice of their private practice. Not alone has the staff been called upon to serve the patients of this institution, but they have likewise been asked to carry the burden of clinical teaching by the universities and this again without any remuneration and with a great sacrifice of their own time and money.

In spite of these difficulties, there have been built up great teaching clinics in this institution. Great men

have been connected with the Cook County Hospital and the members of the present staff rank high in the medical and surgical profession and do the larger part of the clinical teaching of the five local medical colleges.

The scientific publications of the members of the Cook County Hospital Staff exceed annually the publications of the medical department of any of the local medical schools, amounting sometimes to over 100 articles or books. In fact, a large part of the clinical research publications of the Chicago Medical Schools comes from members of the Cook County Hospital staff.

Organization of Staff. To expedite matters, it may be well to discuss the problem of the organization from the medical superintendent to the interne.

Medical Superintendent. This position is a Civil Service appointment and should remain so. It is certainly important that this place be occupied by a man of ability and one who will be of material aid to the lay warden and the Board of County Commissioners in seeing that the patients have the best care and that the administration of this care be conducted in an efficient and economical manner. He must necessarily be responsible in all of his activities to the commanding executive of the hospital, the Warden, and to the Board of County Commissioners, a responsibility fully as great as that of any medical college executive. It is difficult to secure a man of this caliber for the salary which impoverished Cook County can at this time afford.

Attending Staff. The Civil Service law governing these appointments leaves no choice in their appointment. The subsequent organization of the Attending Staff into teaching units should be encouraged. It is likewise rather generally accepted that clinical groups may be assembled from the staff and one of such a group may be designated as the Chairman. It is presumed that such a Chairman should devote considerable time to the correlation of the work of this group. There can be no serious objection to the dividing of the attending men into University groups and permitting those having University affiliations to group themselves into a balanced teaching unit.

Chairman of Divisions. It would probably be highly advantageous for each University to select the Chairman of their clinical group with a view of correlating the work of the University and the hospital in a manner which would increase the efficiency in teaching. The University should be expected to remunerate the Chairman for the added time and work which might be his part by reason of this appointment. It is not fair to lay this purely teaching expense on the Cook County tax payer. It should, however, be understood that this Chairman must be a duly qualified attending man and responsible to the Hospital authorities for the care of his patients.

Associate or Junior Staff. In order to make available to the younger man of the profession the study facilities of the Cook County Hospital, it would seem a wise provision at this time to create an Associate

or Junior Staff. Their appointment will be necessary if a large increase is to be made in the amount of teaching done at the hospital.

This group would be made up of those individuals who have finished their residencies and are still too inexperienced to shoulder the entire responsibility for care of patients which would be the obligation of the Attending Man. It seems consistent that the University should keep in close touch with these comparatively recent graduates and that an eligible list of such young men might be furnished by their respective colleges.

The method of choosing the Junior Staff from this eligible list might be done in several ways. It has been suggested that each Attending Man choose a Junior from the eligible list and if he were acceptable to the Board of County Commissioners he might be appointed for one year, subject to reappointment. Another method of appointment to be considered would be to have the Junior Staff appointed by the Chairman of each clinical group. Still another method of choice might be by competitive examination in the respective University eligible lists. The first method would probably function with less friction.

Residents. There are at the present time some 20 resident physicians on service at the Cook County Hospital and this number should be increased as rapidly as the housing facilities and service arrangements will permit. Their duties should be to supervise and supplement the work of the internes, thereby affording a continuity of service between the Interne and Junior Staff member. The method of appointing such Resident Physician might well be left to the Executive Committee of the Hospital as is the custom at the present time.

Internes. The interne body should and must necessarily continue to be chosen by Civil Service examination from graduates of the Chicago Medical Colleges.

The Executive Committee of the Hospital. This committee should be made up of medical staff members and hospital executives well versed in the problems with which they deal. Its members must be so related to the institution which they serve that they can be made responsible to the Board of County Commissioners and the Electorate of Cook County.

The Establishment of a Post Graduate School. In order to establish a Post Graduate School which will function properly it will be necessary for some members of the staff to devote a very considerable portion of their time to the organization and conduct of such a school. In so far as there is great need for this clinical type of Post Graduate teaching in the United States, it seems proper that steps should be taken at this time to lay the foundation for such a school within the Cook County Hospital. It would greatly aid in attracting physicians to Chicago for study and it would certainly increase the prestige of Cook County Hospital and help make Chicago a greater center of medical education. The Chicago Medical Colleges offer practically no post-graduate work but the County Hos-

pital already has a very popular summer post-graduate course of clinics.

There are many very intricate problems which will arise in connection with the establishment of this Post Graduate School. One which will probably give much concern will be the question of the equitable distribution of fees charged in a manner that will provide remuneration for the staff members who give their services and which will reimburse the hospital for the personal and physical equipment, which will be used for this purpose. These difficulties do not seem at all insurmountable and a sincere hope is expressed that such a Post Graduate School can be established in the very near future.

The Provision for University Teaching. There is much to be said in favor of the Universities being given greater benefit of the vast resources of Cook County Hospital for teaching. It is apparent that the proximity of the University of Illinois and Loyola University would make such facilities more attractive to them than to the University of Chicago located on the South Side or Northwestern University located on the North Side.

There should be offered no objection to the Universities which so desire, providing themselves with well organized teaching units made up of the Staff of the Cook County Hospital, which Staff heretofore has always had access to every patient in the hospital for teaching purposes.

It does not seem consistent or appear feasible at this time to divide the patients of the County Hospital into any closed division and limit them to the ministrations of only a single group whether it be of University personnel or medical sect. Such a division might seriously embarrass the efficient care of the patient of this institution. It is possible that an outstanding specialist in some certain line might be provided by only one University and it would seem unfair to deny to any patient in the hospital such desirable treatment because he was assigned to another group. It would seem more logical to organize the Staff into their respective University units and their cases be assigned to them in accordance with the very efficient rotation assignment service, which is now in operation at the Cook County Hospital with due allowance for further development of a high degree of specialization inside the various existing specialties.

Personal Element in Reorganization. Every plan which is to be seriously considered in the reorganization of the Staff of Cook County Hospital must have as a fundamental consideration an improvement in the care and treatment of the patient and the matter of teaching, while extremely important, should never take precedence. It would be a great misfortune if the relation of these two activities were reversed.

Valuable additional research could be done at the hospital if the Universities saw fit to secure or advance funds for such work. The hospital has already had such grants and excellent work has been done in the study of pernicious anemia. There are unlimited opportunities for similar studies in other lines if funds are

made available for such work. The Cook County Board of Commissioners is forbidden by statute to use hospital funds for purely research purposes, desirable as they are. The large amount of clinical research now being carried on at the hospital is almost entirely at the personal expense of the Staff member. It is sincerely hoped that by increasing activities of the various Universities in the work of the County Hospital, many valuable contributions may be made to medical science.

CONCLUSIONS

It is suggested that uppermost in the minds of every one concerned should be kept the admonition which has always been so popular in the United States Navy: "Let it be for the good of the ship."

There exists at the present time in the County Hospital a very cordial relationship between the Staff and the Board of County Commissioners and the close harmony that has existed between these groups of men has been necessary to maintain the Cook County Hospital at its present high standing among charity hospitals.

IT MIGHT HAVE COME FROM A DOCTOR

The following letter is said to have been received by a banker in a western state. It might have been written by a physician.

Gentlemen:

I wish to inform you that the present shattered condition of my bank account makes it impossible for me to send you my check in response to your request. My present financial condition is due to the effect of the federal laws, state laws, county laws, incorporation laws, by-laws, brother-in-laws, and outlaws, that have been foisted upon an unsuspecting public. Through these various laws I have been held down, held up, sat on, walked on, flattened, squeezed and broke until I do not know what I am, where I am, or why I am.

These laws compel me to pay a merchant tax, capital tax, excess tax, incorporation tax, real estate tax, property tax, auto tax, gas tax, light tax, water tax, cigar tax, school tax, syntax, liquor tax and carpet tax.

In addition to these taxes I am requested and required to contribute to every society and organization that the inventive mind of man can invent and organize: To the Society of St. John the Baptist, the Woman's Relief, Navy League, the Children's Home, the Policemen's Benefit, the Dorcas Society, the Y. M. C. A., the Gold Diggers' Home, also to every hospital and charitable institution in town; the Red Cross, the Black Cross, the White Cross, the Purple Cross, the Flaming Cross and the Double Cross.

The government has so governed my business that I do not know who owns it. I am suspected, expected, inspected, and disrespected, examined, reexamined, informed, required, commanded and compelled until all I know is that I am supposed to provide an inexhaustible supply of money for every known and unknown deed, desire or hope of the human race, and because I refuse to donate to all and then go out and beg, borrow or steal money to give away, I am ousted, cussed, dis-

cussed, boycotted, talked to, talked about, lied about, held up, held down, and robbed until I am just about ruined.

The only reason that I am clinging to life at all is to see what the hell is coming next.

Very respectfully,

INDISPENSABLE USES OF NARCOTICS: CHEMISTRY OF BARBITAL AND ITS DERIVATIVES

George W. Collins and Paul Nicholas Leech, Chicago (Journal A. M. A., May 30, 1931), believe that the increased use of hypnotics undoubtedly has been due in large measure to the zeal with which pharmaceutical houses vie with one another in introducing new, though not dissimilar, proprietary synthetics having sedative properties. Today, barbitol and its derivatives are by far the most widely used. Yet it was scarcely a century ago that the first synthetic substance to be used as an hypnotic was prepared, namely, chloral hydrate. Liebig discussed its chemistry in 1832, but it was not until 1869 that Liebreich reported extensively on its pharmacologic action. Since then there have been many contributions to hypnotics before the present-day popularization of the barbitol class. The authors present a brief and relatively nontechnical review of the chemistry of barbitol and its derivatives. In order that the reader may easily visualize the relationship of the barbitols, there is appended here a chart showing the structural differences and their respective melting points. It will be noted that the compounds, chemically speaking, are probably more closely related than any other large group of essentially similar pharmaceuticals.

TREATMENT OF DEMENTIA PARALYTICA

Clarence A. Neymann and Michael T. Koenig, Chicago (Journal A. M. A., May 30, 1931), present the results of a comparative study of therapeutic results obtained in a series of clinically similar cases of dementia paralytica treated with malaria, sodoku, and diathermy. They state that the remission and improvement rate of diathermy exceeds that of malaria and sodoku. The death rate with the diathermy method is nil. Diathermy offers a hope of remission in types of dementia paralytica which seemed to be unamenable to treatment of any kind. The serologic changes produced by any form of hyperpyrexia do not coincide with the clinical changes. Diathermy permits the treatment of cases in which the use of malaria or sodoku would be contraindicated. The use of this method is easily accessible to any physician, trained in the technic. In many cases the treatment can be given ambulant.

SYSTEMIC REACTIONS FROM POLLEN INJECTIONS: THEIR CAUSES AND PREVENTION

George L. Waldbott, Detroit (Journal A. M. A., May 30, 1931), presents evidence in support of the view that reactions from pollen injections are elicited by an excess of antigen absorption above the patient's individual

tolerance. This effect may be produced by too fast absorption, such as an accidental intravenous injection, by the backseepage of extract into a vein punctured accidentally, or by an overdose of antigen. Factors contributing to the effect of an overdose are: incomplete absorption of an injection given some time previously; absorption of additional pollen through the nose during the pollen season; absorption of substances other than pollen to which the patient is sensitive. The clinical manifestations of pollen reactions appear to be identical with those of reactions from injections of horse serum. From the observation of patients one gains the impression that if the reaction is accelerated it manifests itself as a shock which is very close to, if not identical with, the anaphylactic shock in the experiment with the guinea-pig. If the reaction is not violent enough to cause an anaphylactic shock, allergic manifestations, such as asthma, are produced, localization of which is likely to be determined by the presence of antigen in the affected parts of the body.

POTASSIUM THIOCYANATE IN TREATMENT OF ESSENTIAL HYPERTENSION

In a review of the literature, David Ayman, Boston (Journal A. M. A., May 30, 1931), did not find clear evidence to show the clinical value of the thiocyanates in essential hypertension. From his own observations he concludes that potassium thiocyanate has a hypotensive effect which is almost always associated with distressing side reactions. The hypotensive and toxic effects, practically always occurring simultaneously, are produced by large doses given for short periods or small doses given for long periods. In view of the known effects of the much less toxic sedatives such as the bromides, further clinical trial and study of the thiocyanates should be limited to the purely functional, early stages of the disease. Clinically demonstrable arteriolar sclerosis is a contraindication to its use.

STUDIES IN THROMBO-ANGIITIS OBLITERANS (BUERGER)

Samuel Silbert and Mae Friedlander, New York (Journal A. M. A., May 30, 1931), made a study of the basal metabolism in fifty cases of thrombo-angiitis obliterans, in twelve men who were heavy smokers, and in ten persons with circulatory impairment due to atherosclerosis. An average reading of minus 16.2 per cent. was obtained in the patients with thrombo-angiitis obliterans. An average of minus 15.1 per cent. was obtained in male smokers. The atherosclerotic group showed a metabolism that was normal or slightly above normal. The average reading was plus 9 per cent.

It is noticeable that a common cause of death among surgeons is disease of the heart, especially coronary stenosis, coming on in the latter of the sixth and early part of the seventh decade of life. The tendency to death from heart disease is common to all men who live lives of stress.—William J. Mayo, M. D., *The Journal of the American Medical Association*.

Original Articles

THE ECONOMIC TREND, AND THE IMPERATIVE NEED FOR CHANGE IN THE METHODS, AND IN THE ATTITUDE OF PRESENT MEDICAL PRACTICE*

CHAS. D. CENTER, M. D., F. A. C. S.

QUINCY, ILL.

It may be that I cannot adduce anything new to and for this subject. I am not sufficiently conceited to make me think that I can say the last word along this line. But there is a change impending. The old saying that "The World Do Move," means just as much to the medical profession as it means to every profession, and every avenue of commercial business. There is no use trying to fool ourselves; there is no use in assuming the ostrich position, with the head in the sand, and because of this position become unable to see what is going on about us.

Almost from time immemorial the medical profession has had to fight for its professional existence and this in spite of the fact that the first law of nature, self preservation, made it the second oldest profession in the world. The profession of the prostitute is the oldest—cause and effect in other words. And the reason is easy to see, for the medical profession has always had to deal, more or less, with intangibles; with symptoms, conditions, treatment and results not clear or even evident to the layman. It is impossible for the layman to even conceive, or regard as important many of the things the doctor must consider.

By way of illustration, when one buys a horse, one has a horse to show for the purchase. Of course one may get stung or lose money on the deal, but at least there is the tangible evidence for the exchange of money on the transaction. In most cases the doctor has nothing to show the purchaser as a result of his buying the doctor's goods. If the patient dies the doctor cannot point with pride to the reason why he should receive money. If the doctor amputates a leg, in spite of the necessity for so doing, it looks as if the patient was the loser. If, as in so many cases, the illness is one tending naturally to self-recovery, when that recovery has taken place the patient, or the patient's family

does not like to be reminded by any self-adulation on the part of the doctor, that he has performed a miracle, and is entitled to his fee. It is human nature, apparently, for the patient who has recovered to magnify the importance of the illness, or the operation, to his lay friends, and to minimize that importance to the doctor when the bill is presented.

The result is, and has been, that the members of the medical profession are Ishmaelites with the hand of every one against them, speaking in a commercial sense, except in the time of need. Of course there are exceptions to this rule. There was a period, it is true, when the word of the old family physician was law, when his opinion was not questioned. That day has passed, and today families change from one doctor to another, with perhaps no rhyme or reason, just as readily as they change their grocer or butcher.

Then, whether for good or for evil, legislation began to creep in. Legislation had for its backing one of three aspects. 1st. A real interest in the commonwealth. 2nd. A personal axe to grind. 3rd. A political move initiated by political interest, or for monetary gain.

With this legislative interest came the influence of the cults, but even then the common sense of the legislators kept their feet on the ground at least to a considerable extent. Most notable in this respect is the law that says "Average intelligence in the use of approved methods is all that the law demands of the medical practitioner." Of course the medical profession has quacks; of course there is no excuse for them, and organized medicine will do all in its power to eliminate them, but it must be remembered that every profession, and every potential commercial enterprise, has quacks, counterfeits, or whatever you wish to call them.

And now let us come more nearly to our own problem. Let us consider the need for reconstruction. Then let us consider the drift of events, and of public opinion. Then the influence of adverse, even though they may be ignorant, forces. Here are three headings, which I propose to take up in detail, or in extenso.

The biggest thing now on the medical horizon is the "Cost of Medical Care." This is particularly offensive, because from the title it seems to imply that the doctor is responsible for any cost which may arise from illness, or death. It has seemed particularly obnoxious, because any

*Read before banquet meeting of Secretaries Conference, annual meeting Illinois State Medical Society, 1931.

doctor who has been following the reports, has been able to see, that to the necessary cost of medical care, has been annexed the extra girl in the kitchen, the trained nurse or nurses, the hospital, the loss of time of the wage earner, and the undertaker's bill. The discouragement, which was alike to all of us, came on us when we learned that Dr. Ray Lyman Wilbur, a doctor and a member of President Hoover's Cabinet, was at the head of this movement. Let me say right here, I believe that Dr. Wilbur is working for a solution of this subject; that while he is an official, he remembers the medical profession of which he is a member; and that he is just as cognizant of our efforts and troubles, as if he were not a member of the President's Cabinet. Also, that he is in sympathy with the medical profession, and while, on the surface it appears that he is antagonistic, that we will discover shortly that he is one of the best friends the profession ever had.

A moment ago I said "Let us consider the need for reconstruction." By this I mean not so much reconstruction of the science of medicine, as the need for reconstruction in our methods of the adaptation of this science to the patient, considering him at once as a patient in a physiologic, and pathologic way, and as a patient in a commercial way. Or in other words, while trying to guard and continue his health to extend the same professional aid to his pocket book. Now don't think for a moment that this is going to resolve itself into an argument for reducing the doctor's fees, for I believe that in 98% of cases, doctors do not over charge their patients. I make that estimate at 98% to allow 1% for those practitioners who do wilfully over charge, and 1% for those who may unintentionally, and unwittingly charge too much occasionally.

In a recent number of the *Atlantic Monthly* a Mr. Evans Clark has a very readable and specious article regarding doctors fees and the high cost of medical care. He bases his premises for the article largely on one case which came to his attention. A family which for ten years had had no sickness of any moment; during these ten years the head of the family was in receipt of an annual income of \$9,000. The recital does not tell whether he saved any of this annual income or not. The family consisted of the man, his wife and three children.

Then in one year's time came scarlet fever. One of the children developed mastoiditis and was operated on. The recital does not say whether the child lived or died, but inasmuch as the tabulation of costs does not show an undertaker's bill we may assume the child survived. Then the wife developed a peptic ulcer and underwent operation; again no end results are made known, and then Mr. Evans Clark announces that the cost of these illnesses in this one year amount to to \$3,000. How much of that sum is hospital charges, nursing charges, laboratory fees, loss of time of the wage earner, etc., is not stated, but the inference is that the most of that \$3,000, was doctors' charges. But even if the doctors took the \$3,000, the article does not prove the contention of the auditor that "The high cost of medical care," is generally too high.

Now, from my own knowledge, I can cite two cases, where the charges were too high for the services rendered, and for the financial ability of the patient. A man past 70 years of age had pernicious anemia. He was in comfortable circumstances, rated at about \$100,000. During the last two weeks of his life he was attended, jointly, by three physicians. During these two weeks they gave the patient five blood transfusions, and the bill put in against the estate was \$32,000.

The other case is of interest because the bill was itemized. An elderly man, in very moderate circumstances was struck by an automobile, when he was in front of a doctor's office. The bystanders called the doctor, who put the injured man in his auto, and drove him 12 miles to the nearest hospital. On arrival at the hospital the man was dead. The itemized bill rendered against that estate was:

For attending patient on street.....	\$ 10.00
For transportation to hospital.....	15.00
Loss of a confinement case while gone..	50.00
Loss of office practice while gone.....	22.00
10% on above amount as overhead.....	9.70

Total\$106.70

And still these three cases, considered in the most unfavorable light possible, do not prove that the high cost of medical care rests on the shoulders of the doctors, for I'm sure you will agree with me that on the days these three

patients were seen, that throughout the United States at least 500,000 other patients were seen at moderate charges. Still the public is inclined to discredit the medical profession and to ascribe the high cost of medical care solely to the doctor.

Do you think for one moment that the doctor, for the average case that dies, averages a bill of \$363.00 (New Jersey 484, N. Carolina 197.) And still a careful survey made of the entire United States shows that that is the average burial cost. Do you think that the public, when it hears related how the sickness of so and so cost him \$2,780, realizes that he had two trained nurses, for a period of 6 months, meaning a nursing charge alone of \$1,820? That he was in the hospital for four months, in a room costing him \$8.00 a day, or \$960.00? That he demanded, and got three complete body x-rayings, and when I say this it means for picture purposes, and that he had repeated ultra violet treatments, at an added cost unknown to me? And that from time to time, his wife, or daughter, was served with an extra meal in his room because that pleased him? And still for all that time the doctor's bill amounted to but \$465.00. And if, and when, he dies I have no doubt his funeral bill will be at least \$2,000 more. That sounds like "The high cost of medical care," but it doesn't prove it in the first place, for the patient knows what he is doing and what it is costing him, and in the second place it proves that the doctor's bill is an almost negligible portion of the entire cost.

Now there is no doubt that the cost of being sick and of dying has gone up. So has the cost of labor, of manufacture, of groceries, and of every thing else. So have doctor's fees. Some of us can remember when the laboring man worked for a dollar a day, and when eggs were 10 cents a dozen, but in my memory, speaking from a practice of 35 years, the doctor's fees have risen less than 50%, while the price of eggs, and the wages of the laboring man have risen from 75% in the one case, to 300% or more in the other. Hospital prices have gone up too. I can remember when my county paid either of our hospitals \$3.00 a week for a charity case; now the county pays \$10.00, and the hospital loses money on the transaction just as it did at the \$3.00 rate. Most of us can remember when a hospital consisted chiefly of ward beds, 6, 12, 20 or even 50 patients in the same ward;

now we find the bed capacity of a hospital is more than 50% private rooms, and no big wards at all. Many of you can remember that if you had died 30 or more years ago your family could have purchased the best casket obtainable for about \$100; today you cannot purchase that same casket for \$400. There were no fees for x-ray, for electrocardiograms, and few if any for laboratory work,—either microscopic or chemical; the electronic theory of diagnosis had not been developed, and all the Chiropractors were working on the farm, in the shop, or in the livery stable. At this time the best medical education, in the best medical college, could be procured in not to exceed three years, and at an average cost of \$400 per year; today it takes 4 years and if the student gets through for less than \$1,000 per year he is doing well.

And what has brought about the change we find today?

1st. The fact that the world do move.

2nd. The extension and development of medical science brought about by the untiring labor of thousands and thousands of earnest medical observers and medical researchers.

3rd. The demand by the public for expert and conclusive examinations, and treatment of the highest order, be the cost what it may, and this contemplates and includes your laboratory findings, your x-ray, or radium, your electrocardiogram, your trained nurses, your high priced hospital, your drugs which have gone up in price from 100% to 1,000%, and this public demand with all it entails is the dominant reason for the high cost of medical care. Why, even that satisfactory law, devised, developed and promulgated years ago, that law which I quoted you early in this paper has contributed in no small measure to this question, for today if you have a fracture case which you treat without one or more x-ray pictures, and you get a bad result because of a mal-position, that old law forces you to increase the cost to that patient in order to avoid being stung in a mal-practice suit. Still another feature in this chain of demands by the public, is the demand for the services of a specialist, and specialists cost more than the average doctor and very often do not know as much. In a measure you and I are to blame for this increase in cost, for we haven't the moral courage to say to the patient "If you want consultation let me call Dr. Jones who

lives just around the corner; he knows just as much as Dr. J. Slingerland Coots, and will cost you only \$10.00 for his opinion, while J. Slingerland will charge you \$200.00 to come up here and see you." And we may feel in our bones that all this is absolutely true, but we don't say it for two reasons; 1st. we don't want brother Jones from just around the corner, to make \$10.00 off of our patient, and perhaps get the credit for the patient's recovery. Next, we are afraid that if we do not put in a call for Dr. Coots the great specialist, that the patient will fire us off the case. In other words we may have the moral courage and the professional confidence to guard and protect the life and health of the patient but we haven't the moral courage to protect his pocket book.

Is there any relief for the so-called high cost of medical care? Yes, but just as the whole country is, and has been for ten years, going through the process of deflation just so will it be a long, hard and discouraging pull to bring down the costs now existing; the public which now demands so much must be taught that it is just as well off without a lot of the things now demanded. Through more or less kindly and altruistic motives this state now insists on a nurse taking a three year course in order that she may become an R. N. Because of urgings from the medical profession the state now compels a medical student to take a pre-medical course in college, a four year course in medical school, and a one year course in a hospital. A short time ago Dr. E. H. Ochsner published in the ILLINOIS MEDICAL JOURNAL a very comprehensive and cogent article on the uselessness of a three year course for nurses, and I heartily agree with him that, given an intelligent girl, with a high school education, and two years training, in the fundamentals of nursing—leaving out all the frills,—that we would have just as competent nurses as we have today. I might go farther than this in voicing my personal opinion, and say that from my own experience we might have better and more satisfactory nurses, for the present day article too frequently feels her importance and arrogates to herself the position and the responsibility of the doctor.

And now, with an immediate remembrance of that clause of the Constitution of the State Medical Society which reads "To elevate the standard of medical education" as one of the

purposes of the state society, I am going to voice the opinion that again, just as the nursing profession did, the medical profession has been guilty, in a sense, of increasing the costs of medical care. The present method of medical education, together with a recognition of the economics of the situation is steadily tending to centralize physicians in the larger towns and cities. This means that when a patient living in a village 15, 20 or more than 20 miles away from the town or city, a village where there is no doctor, is forced to call a doctor over this increased mileage. It means an increase in fee, and a perfectly just increase too, so far as the doctor is concerned; for men who have spent 8 or 9 years in obtaining a medical diploma, at a cost in time and money of at least \$20,000, are very loath to isolate themselves in a village where is but little chance of advancement, and perhaps no chance for professional contact. So that if there was a possibility, a way, a means for that prospective doctor to start after his high school education, have one year "Riding" and studying with a preceptor, have a three year medical course, and a one year internship, he would have saved 3 or 4 years of time and expense, would not feel that he was a full-fledged specialist, on graduation, and if he had the average inherent qualities necessary for a good practitioner, I believe he would be worth just as much to the community as the man who is compelled to take the 8 or 9 years, to reach his goal.

Item 3. Those of you who read an article in the December issue of our State Journal by Dr. Logan Clendening, either agreed with him or did not agree. At any rate you will all agree that it was a very interesting article on "Physical Diagnosis." And while I have no idea that he had in mind the matter of the high cost of medical care, he made a most excellent argument along this line. The entire weight of this argument was that because of our laboratories, and our various sorts of medical equipment, we as a profession are losing sight of, and losing expertness in making correct diagnoses by the use of clinical symptoms as discovered, and to me it seems that more and more, we are depending on the test tube, on our basal metabolism, on our x-rays and on the rest of our mechanical equipment, all at the expense of the patient, to establish many diagnoses which might, or should

be established on the history and the clinical findings.

One more thought and I am done. Group practice is becoming more and more fashionable. It is here, and I believe it is going to stay. Why? Because it cuts down overhead for the doctor, gives the patient the benefit of several opinions if necessary, affords the patient all necessary mechanical examination and at a lesser cost to the patient than if the patient went to several isolated doctors, or different laboratories for the same findings. But when all is said do not forget that the high cost of medical care is due chiefly to public demand, the demand to have the best regardless of the price, and it is up to the members of the medical profession to show the public that high costs do not necessarily mean greater benefits, or increased safety to the patient.

SALVAGING THE HANDICAPPED*

GOLDER L. McWHORTER, M. D., Ph. D.

Assistant Clinical Professor of Surgery, Rush Medical
College of the University of Chicago

CHICAGO

An individual may be handicapped because of one or more disabling physical conditions.

In addition, old age, poverty, and pain, are of fundamental importance in the study of patients requiring surgical rehabilitation. These three factors are not always given their proper valuation and should be carefully considered in an attempt to rehabilitate the physically handicapped.

When a patient is disabled largely by the infirmity of old age, to the extent that correction of any serious physical disability would result in continued helplessness, nothing surgical should be attempted, as a general rule. However, rehabilitation might permit him to advance through one or more stages from complete invalidism to some degree of usefulness, or even self support. In some, special training may be necessary, while others may be able to return to their original work or perhaps to complete physical function in spite of old age.

It has been found usually that operations may be planned under modern anesthesia and surgical skill so that increased risk is to a large extent parallel to the disease and degree of dis-

ability rather than to the advanced age of the individual.

Pain is often the cause of increased or even complete physical disability. Its relief alone may permit the patient to advance from one or more stages of disability or at least to be comfortable. If possible, physical rehabilitation should also be carried out. While pain is frequently due to inoperable disease, such as cancer, chronic arthritis, infections, and neuritis that defy cure, relief may often be obtained by palliative operations upon the local disease, by alcohol injections, by section of the nerves carrying the pain sensations, or even by cutting their fibers in the spinal cord.

The risk of such operations may be adjusted to the physical condition and the probable outcome of the disability or disease in the individual. No one should be denied the opportunity for relief of pain when it may be obtained at a reasonable risk. The tendency of relatives and uninformed friends is often to prevent attempted surgical rehabilitation and to urge the use of habit-forming drugs for the relief of pain.

Poverty exerts a potent effect upon many individuals and yet under favorable charitable institutional hospital care, where an attempt is made to study and rehabilitate every individual to his limit, as favorable results may be expected as in the private hospital. However, it is not always possible to obtain the maximum benefits due to the results of poverty upon the constitution of the patient and, at times, in a post-operative crisis, due to insufficient individual attention.

For the individual, poverty may often delay rehabilitation because of late examination without the necessary tests for diagnosis and without access to an experienced clinician. Frequently, fearing to face the medical findings or fearing to lose a job, one may procrastinate until the disability has progressed. This delay is often vital because it prevents intervention when the disability is most easily corrected and eventually requires more radical and serious surgical treatment, or often results in only partial functional restoration if it is not too late.

Unfortunately, the private patient also presents advanced stages of physical disability. Several reasons have been observed, such as isolation of residence, unexpected complications, treatment under inexperienced medical advisers, and

*Read before the Illinois Conference on Public Welfare, at Springfield, Ill., Nov. 12, 1930.

familial or religious fervor in avoiding any surgical treatment.

The response of the indigent patient to rehabilitation as compared to the private patient has been observed to be very much the same. When the former has finally obtained treatment he will be found to cooperate, under similar circumstances, as well as the private patient. The occasional exception to cooperation during rehabilitation is the individual who claims compensation or damages for his disability. He may consent to restoration of anatomical or cosmetic deformity, but until his claims are adjusted, he may offer physical complaints of an insufficient or doubtful basis, to prolong his disability. The earlier such claims are adjusted, the better for the future of this type of patient, who quickly becomes a mental invalid, and even with slight, or no physical handicap, it is hard to get him back to work.

Each individual presents a different problem of rehabilitation and no set rule may be made. This lack of conformity produces a most difficult problem since it requires the widest experience to meet the varied and often complicated factors producing disability.

Consequently, it is no wonder that a large proportion of the handicapped have been given up by medical attendants in varied large general hospitals as hopelessly or permanently disabled. Many of these have no hope of future self-support and an unusually large number have been observed to be old and poverty-stricken.

Rehabilitation will be discussed under the following classifications: those suffering from cancer, those disabled from accidental injuries, those suffering from chronic disabling arthritis, the disabled from tuberculosis of the bones and joints, and finally, a miscellaneous group suffering from conditions and diseases seen in any general hospital.

1. Carcinoma. The group of patients with cancer to be discussed includes not only those having a varied involvement of many organs and regions of the body, but with a predominating number of patients suffering with advanced cancer of the face and mouth. One sees, in a charitable institution, particularly, a large number of patients sent there to die, because of their pitiable deformity or nauseating stenching odor. In any one with cancer, a hopeless prognosis should not be made by the untrained physician. When

there is no hope of cure, it need not be told to the patient but to his legally responsible relatives. All patients, no matter how hopeless, should be carefully studied by all necessary laboratory methods, including the x-ray.

In a charitable institution with many old people, it may be found that many x-ray films, and other laboratory tests are taken too late to be of value, but it is a wise extravagance, and often holds out hope for the brave patient until the last. Occasionally, it proves its need by permitting a patient to be saved from prolonged suffering or a measure of disability. In the incurable patients, relief of pain may be obtained for a time by surgical or medical treatment, including radium. It may be stated that a considerable number of patients coming for relief, supposedly in a hopeless condition, may be cured or offered a large measure of relief.

In the early stages, surgery usually offers a most hopeful method in the treatment of cancer; however, it must be remembered that in some of those very early cases the cancer has treacherously spread to distant parts without localizing symptoms. On the contrary, some of the large and apparently hopeless inoperable cancers have resulted in apparent cures following a courageous and skillful operation.

This fact should prevent one from declining to operate upon or treat any patient unless a thorough examination or exploratory operation has proved the condition to be inoperable. In the diagnosis and operative treatment of cancer and especially in the borderline cases, there is no place for the timid or untrained surgeon. The possible effect of a mortality upon the surgeon's reputation must not deter him from an extensive operation, where that offers the only hope of cure. Without accepting a high mortality by surgical treatment, in many of these extensive cancers the outcome can only result in prolonged suffering and death. A grave responsibility therefore rests upon the clinician.

One rarely does harm by a well performed exploratory operation or by removal of tissue in order to confirm the diagnosis microscopically where it is indicated. By increased surgical experience and by use of newer methods of local and regional anesthesia with procaine, the operative mortality may be markedly reduced. In certain instances other methods of treatment

such as the use of radium or x-ray may be preferred.

2. Physical Disability from Injury.

It has been pointed out recently at the meeting of the American College of Surgeons that 1,600,000 persons are injured every year in this country in addition to 23,000 persons killed in industry and 30,000 on the highways, yet it was asserted that the medical profession is almost entirely unequipped to rehabilitate those injured. Dr. Besley stated that more persons are maimed for life each year in automobile and industrial accidents in this country than were similarly injured in the U. S. Army during the World War. He asserted that most of the permanent injuries were due to the incompetence or ignorance of the surgeons or physicians to whom the accident victims were taken for treatment.

I wish to emphasize that given well-planned surgical treatment, the earlier it is received as a general rule, the more satisfactory will be the outcome, and the less extensive the operative procedure. On the other hand, most patients will have better results if the preliminary treatment, unless performed by experienced surgeons, is limited to first aid. The patient may then, by means of modern transportation, receive skilled counsel or treatment. One is appalled at the pitiable attempts made, and the unfortunate results obtained by the majority of physicians untrained in surgical principles, when it comes to treating complicated injuries. Many of the bad results are obtained by the self trained local hospital surgeon. This is particularly true from accidents on our highways where the nearest physician, regardless of his experience or lack of training, is given unlimited authority. A reasonable delay in order to obtain an experienced surgeon, with a well planned and well executed operation, would frequently permit the restoration of complete function or at least save months of disability and great expense.

In the treatment of injured cases it is important to emphasize the prevention of avoidable deformity. Methods of prevention are often simple, including traction, the use of splints and appliances, followed by early voluntary motion of the joints. In certain instances, motion must be instituted by gentle passive movements or massage. Later, it may be necessary to break up adhesions which are otherwise followed by prolonged disability. In the early

treatment of injured patients in shock they should rarely be operated upon, except to control hemorrhage, or to repair visceral perforation. Heat, fluids, including saline and dextrose solutions, and complete rest are vital to recovery from shock, and recovery may be more probable if the operation is delayed until the period of shock is passed. Stimulants or sedatives are indicated to supplement these fundamental remedies.

In this group of physically disabled patients, one is faced by a varied array of widespread deformities and causes of disability. It is surprising how many of these patients may be improved by some form of surgery, or by physical and occupational therapy. One must consider, first, every feasible surgical treatment in conjunction with or followed by physical therapy and some suitable light work. Often a number of operations may be required.

Given good opportunity for surgical rehabilitation, where indicated, one may obtain most excellent results with no great amount of equipment or personnel. Cooperation by the patient in active feasible light work is often much more efficient than indifferently given physical therapy, and puts the patient on his own resources.

One can only outline some of the frequent causes of disability, such as deformities from complicated fractures, of fractures improperly set, nonunion of fractures, paralysis from injured nerves, defects and contractures resulting from complicated injuries or the failure to prevent them during treatment. Many of these patients have been through one or more hospitals and have been given up as hopeless. In spite of inability to cure all, one can improve a large percentage so that they may be advanced to a stage of lessened disability or even self support by some well chosen, often little known or original surgical procedure. These patients present individual problems and one must study the patients as well as the disability in order to solve their handicap.

In the correction of bone and joint deformities, one may choose to aid repair by the use of a bone graft sawn by an electric motor or to maintain fixation with bone, ivory pegs or plates, and more rarely by metal plates or screws. In nerve injuries, the correction of deformity and relaxation of the paralyzed muscles by suitable splints over a sufficient length of time may be most diffi-

cult with an ambitious patient. Here again, an improper plan of treatment may result in permanent disability. If indicated, immediate nerve suture is satisfactory, but accuracy and primary union without infection are most important.

3. The patient with chronic disabling arthritis.

Here one meets the challenge to cure or rehabilitate many patients following acute and advanced chronic arthritis. There are two chief types—the atrophic and the hypertrophic types, presenting somewhat different problems. The prevention of deformity and obtaining function of joints may require splinting, traction, or surgical interference. Again, removal of foci of infection may permit physical improvement and relief from disease. Osgood¹ stated that chronic rheumatism is the most widespread of the chronic diseases, and both socially and economically the most important.

Osgood found rheumatism as common as heart disease, six times as common as tuberculosis, and fifteen times as common as cancer. It is consequently most unfortunate that the percentage of patients with disabling arthritis which it has so far been possible to rehabilitate by surgical means, is the smallest group presented here. They are also the most difficult. The most satisfactory time to rehabilitate them is after the disease has become quiescent. During the active period, preventable deformities must be constantly avoided.

4. Disability from bone and joint tuberculosis.

Tuberculosis in all its forms has been termed by Nakagawa² as one of the three most disastrous diseases of consequence to workmen in factories and mines, due to late recognition and timid treatment. This constitutes a larger disability in adults than is necessary. Hibbs³ observed unsatisfactory results from medical treatment of tuberculosis in children, especially in the New York Orthopedic Hospital and its Country Branch, after a residence of from 4 to 7 years. Many of these patients had recurrences 1 to 10 years after discharge, although they were apparently cured on their discharge.

Smith and Watters⁴ in a study of 208 patients with hip joint disease who had resided in the Country Branch from 4 to 7 years, found that 24% died mostly from other forms of tuberculosis, in 47% the disease was active, in 27%

apparently quiescent, in 22% the diagnosis was incorrect and only two of all these patients were free from symptoms and had a useful range of motion. Hibbs and von Lackum⁵ observed in tuberculosis of 77 knee joints similar relapses and few cures without ankylosis after medical treatment. Hibbs³ reviewed 154 patients with tuberculosis of the knee joint, 150 with tuberculosis of the hip joint, and 22 of the ankle and tarsus, in which he was able to obtain fusion by operation. In this group, there were no recurrences after operation, although all of the patients engaged in great activity. In addition to a cure, these patients have been freed from the constant danger of extension of the tuberculosis of the joints, as well as from the necessity of years of treatment in a hospital clinic. In a small per cent. operation failed to produce fusion.

Particularly in adults, the problem becomes an economic one aside from the importance of a cure. Ryerson⁶ recently stated that he has seen no cases, young or old, of proved knee or hip joint tuberculosis get well without ankylosis by nature or by operation on that joint.

In this group of patients with tuberculosis of bones and joints, which I have operated upon, the results have been unexpectedly good.

From the first, an effort was made at operation to dissect out and excise the local tuberculous disease of the joints of the extremities where that seemed possible. This was frequently done with preservation of good function. In the shoulder and elbow, it was found possible to obtain a cure with motion in a fair number, while in the wrist, it was not attempted. After removal of the carpal bones, it was found difficult to obtain very much function of the fingers, especially when the wrist joint was also resected.

In old people, a local curettement of the carpal bones has been found to be quite satisfactory in the relief of the disease and resulting in fair function. However, a sinus will frequently persist.

In the lower extremity, a cure is dependent upon obtaining an ankylosis. In these joints it is particularly important to resect before a sinus forms. In late tuberculous disease with sinuses and extensive secondary infection of the ankle or knee joints, amputation is the safest procedure. This is especially true where there is an associated pulmonary disease. Under these conditions, the factors necessary for bone union

in the resected joint appear to be decreased and, especially where secondary infection is present, extension of the tuberculosis is likely to occur. It has been observed from a study of the resected joints and from the x-ray films in this group, mostly in adults, that the tuberculosis was more frequently primary in the synovial membrane, and secondarily involving the bone in some instances. This fact prevented x-ray diagnosis in some cases although operation was indicated from the clinical findings together with the x-rays.

In all patients operated upon for tuberculosis microscopic examinations have corroborated the diagnosis, and in some, the tuberculosis bacilli were found in the cold abscess. Practically all of the unfavorable results were in patients with active extending pulmonary tuberculosis, or multiple bone tuberculosis, in whom a satisfactory resection was impossible. In tuberculosis of the vertebrae fusion by operation has been of considerable value although where pulmonary or multiple bone tuberculosis existed there was a tendency for the persistence of a sinus suggesting activity.

Quite a percentage of patients with tuberculosis of the bones and joints have been discharged, ready for light work; in a few, after only a few months of hospital or institutional care.

5. The miscellaneous group of patients rehabilitated can be best described by the statement that they are met in every general hospital. At times, rehabilitation results in saving a few weeks time by a well planned skin graft after an injury or burn. In others, in instituting an early operation upon a badly displaced fracture, or avoiding ankylosis after fractures about joints by instituting early motion. Distressing complaints may often be relieved following a correct diagnosis involving a thorough clinical examination and a few well chosen laboratory tests.

The necessity for multiple stage operations has been demonstrated upon aged patients and those who have become weakened by disease, overwork or undernourishment.

An early exploratory by an experienced surgeon, especially in the abdomen, and where necessary obtaining a section for immediate microscopic examination, rather than procrastination through some hope of a medical cure, may per-

mit relief from many disabling or distressing affections.

One must conclude with a hope that diagnosis will be made and treatment planned in the future more by men seeking to rehabilitate and obtain a return of function, than by those having an experience limited to symptomatic relief.

It is believed that surgery of rehabilitation is not necessarily radical surgery and that it may be performed under well chosen surgical conditions, frequently, with no more than the minimum hazard.

However, one must choose the operative procedure which will obtain a reasonable function with the least risk to the individual patient.

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PARALYTIC ILEUS*

GEORGE KIRBY SIMS, SC. B., M. D.

Attending Obstetrician and Gynecologist Washington Park
Community Hospital

CHICAGO

It is not with a feeling of presenting anything new on the subject of ileus that I submit this paper, but rather to review some of the features in regard to the condition as well as to offer a few remarks from personal observation of a small number of cases in the hope that what may be said might be of some value to another in his method of caring for such cases.

Ileus, as we generally think of it, is an intestinal colic due to an obstruction which is accompanied by tympanites and cramp-like pains usually recurring periodically, with nausea and vomiting, in which the latter finally becomes fecal in character.

There are two types of ileus:

1. Mechanical or dynamic, due to adhesions, constricting bands or a volvulus.
2. Paralytic or adynamic, in which the cause may be bacterial or nonbacterial. Or, expressing this type by still another nomenclature, one may say that it is

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peritonitic or traumatic in character and that it brings about an infiltration of the intestinal wall by:

1. Leucocytes, serum and other products of inflammation.
2. The effects of extraintestinal or intrainestinal toxins on the motor nerves.
3. Traumatism to the intestines, peritoneum and abdominal nerves.

In ileus occurring postoperatively, however, one is occasionally confronted with a simple, mass-dilatation of the intestine. This condition is one of the most distressing features with which the surgeon is called upon to treat. And the dilatation of the bowel, of course, exaggerates the paresis.

On account of a very high mortality which accompanies this particular type of case one's end-results, it seems, may be almost as gratifying, in any line of treatment he may follow, as if he should merely summon a group of his colleagues unto himself and repair to the Garden of Gethsemane and ask of them, "Can ye not watch with me for an hour?"

The bacterial type presents a picture of a wholly different aspect than that of the non-bacterial type, inasmuch as in the former there is, early in the case, a hyperperistalsis in which one does not need to use the stethoscope to detect the gurgling and tinkling sounds arising from within the intestinal tract. In fact, in many instances, it is not even necessary as much as to approach the bedside of the patient in order to hear these rumblings, since they may frequently be heard clear across the room. And by observing the uncovered abdomen it is by no means an infrequent occurrence that one may be able to see the result of these peristaltic movements in which segments of the intestine will give rise to periodically recurring peristaltic waves which manifest themselves at different levels of the intestinal tract.

The picture of the condition is a typical one and not easily forgotten. The abdomen is markedly distended. There are acute, recurrent attacks of severe, colicky pains accompanied by nausea and vomiting, the odor of which later becomes fecal in character. The patient's expression is a peculiar one in that the eyes are bright. The cheeks are flushed and there is a look of anxiety stamped upon the individual's face. The mouth is dry. The tongue is parched and brown. The patient complains of thirst, though he may be unable to retain any liquids

taken per mouth. The pulse is rapid, but full. And any attempt to obtain a bowel movement or even to bring about the passing of flatus may be of no avail. The temperature has begun to ascend and there is extreme restlessness, as is evidenced in any case of peritonitis.

Patients suffering from the nonbacterial or the traumatic type of paralytic ileus do not, in many instances, complain of severe or recurrent attacks of pain. And even though the abdomen be sharply distended one does not hear the gurglings and tinklings due to the movements of the intestinal contents, nor may he observe the peristaltic movements that are so markedly obvious in those cases which are brought about by the absorption of toxins and their effects upon the nerve ends in the intestinal musculature. Nausea and vomiting are present and are almost constant. Therefore, liquids may not be retained. Thirst asserts itself. No bowel movement occurs. The pulse becomes quickened and the individual is rapidly dehydrated, although the temperature is scarcely increased until toxic products have begun to be absorbed and made themselves manifest, in which case the patient is nearing an exodus lethalis, even without realizing that he is a very sick person.

The discomfort has asserted itself principally through the abdominal distention, the thirst, and the nausea and vomiting. Death is probably brought about by:

1. Inability of the patient to take and retain a sufficient amount of nourishment.
2. Absorption of toxic products from bacterial accumulations.
3. Poisonous effects of acid products of the gastro-intestinal tract giving rise to
4. Fatigue of the nervous system.

TREATMENT

1. *Prophylaxis* should be the watchword and as a preoperative measure, in order that the desired metabolism, especially that of the chlorids, may be corrected, large amounts of these salts should be given. And where possible, it is also desirable to make a determination of the blood chlorids as well as the carbon dioxid combining power of the plasma, since the procedure is a guiding feature in the postoperative treatment of the case.

2. *Surgical*: As an opening sentence it may well be stated that when the condition has de-

veloped and is recognized operation *must* be regarded as the essential procedure and carried out with skill and dexterity with the idea of relieving the obstruction and restoring the mechanism to normalcy as quickly as possible. The type of operation should depend upon the location of the lesion, the extent of the tube that is involved, the anesthetic used and the general condition of the patient. But of course, those cases which are clearly moribund should not be subjected to the ordeal occasioned by this form of treatment.

3. *Postoperative:* In those cases in which there is nausea and vomiting and the patient unable to retain fluids taken per os, at least 2,000 cc of normal saline solution should be given daily by hypodermoclysis, but with no attempts to give foods of any sort per mouth.

The stomach should be washed out frequently—every hour or two—and a Rehfuess tube left in situ between the lavages, even getting the tube into the duodenum, thereby permitting it to drain away the accumulations with the idea of ridding the patient of toxic products that may accrue through reverse peristalsis.

The lower bowel should be flushed out once or twice daily, followed in each instance by a hypodermic injection of 1 cc of surgical pituitrin, which may be repeated in 30 minutes to an hour, definitely elevating the head of the bed and turning the patient on the abdomen immediately following the enema, with the idea of assisting in the expulsion of flatus. Proctoclysis, with a solution of 5% each of glucose and sodium bicarbonate, should be maintained in the intervals between the enemata.

2376 East Seventy-first Street.

AVIATION MEDICINE WITH SPECIAL REFERENCE TO THE SPECIAL EXAMINATIONS*

LOUIS HOPEWELL BAUER, A. B., M. D.

Consulting Specialist in Aviation Medicine and Formerly
Medical Director, Aeronautics Branch, U. S.
Department of Commerce

HEMPSTEAD, L. I., N. Y.

Aviation Medicine is a specialty that consists in the application of other specialties to aeronautics and is really a branch of preventive medicine.

It had its incipency about 15 years ago and

has gradually grown and received more or less world wide recognition.

Roughly the subject may be divided into sub-headings: the selection of the flyer, the classification of the flyer and the maintenance of the flyer. The specialties concerned are ophthalmology, neuro-psychiatry, physiology and general medicine. Otorhinolaryngology is also concerned to a certain extent but is the least important. To those of you who have had least contact with the subject since the war, this last statement may come as a surprise, as a survey of the American and some of the foreign literature of the war period would indicate that it is of the greatest importance.

Flying calls into play many physical factors not usually thought of in the selection for other occupations, and it produces a wear and tear on the physical mechanism that cannot be over-estimated.

The routine physical examination as it is generally understood is worthless when it comes to the selection of flyers. We have to delve into the phases ordinarily considered only by the specialists in different fields. Lest I be misunderstood let me state that the flight surgeon, as he is called, is not supposed to be a universal specialist. No attempt is made to make him an internist, a psychiatrist and an ophthalmologist all in one. That, of course, would be impossible. Attempt is made, however, to give him sufficient training in these branches to make him competent to perform the specialized examinations required and to make him sufficiently familiar with aeronautics to apply one to the other.

Briefly, the selection of the flyer includes first a general physical examination with which you are all familiar. Particular attention is paid to cardiovascular stability and structural defects which would interfere with the operation of controls. For example, a partially restricted shoulder would prevent the operation of an overhead stabilizer; a stiff ankle would interfere with the operation of rudder and brake; a stiff elbow would prevent free movement of the stick. Many of the large passenger planes are difficult to control in heavy weather and, therefore, hernias are ruled out. In addition, of course, the medical history is gone into, the chest thoroughly examined, evidences of endocrine abnormality are looked for, and the digestive and genito-urinary

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systems examined. The latter, of course, includes urinalysis.

Now we come to one of the specialties, namely, neuro-psychiatry, for a careful examination of the nervous system is highly important. The cumulative stress of flying reacts in particular on the nervous system. Not only are various neurological tests made, such as for gait, station, psychomotor tension, pupillary reactions, knee jerks and so on, but search is made in the history for the various epileptoid equivalents, enuresis, fainting, somnambulism, stammering, migraine, dizziness, pavor nocturnus, as well as true epilepsy. His habits are viewed particularly as to excesses.

Then a careful analysis is made of the personality of the candidate in order to determine in particular the past history of his reaction to stress. Family, business, financial, and personal relations are gone into to determine the trends and potentialities of the individual. Family and past history of nervous ailments are dwelt on. Finally, the individual is summed up as stable or unstable, of slow or normal reaction time, as ready to meet emergencies or apt to go to pieces in emergencies. Head injuries, particularly skull fractures or any injury accompanied by amnesia are looked at askance unless there is apparently absolutely perfect recovery after a protracted period of observation.

The examination of the nervous system is also important in the maintenance of the flyer as a large percentage of the groundings of flyers both military and civil are due to neurocirculatory asthenia or effort syndrome. Flying is fatiguing and only those of good nervous stability and who keep themselves physically fit wear well.

As an illustration of the importance of this part of the examination, I may cite two cases which I have quoted before. These cases were first reported in the military service by Longacre.

"Recently, at the School of Aviation Medicine, a flyer who had been examined elsewhere a number of times, was shown to be at least a potential epileptic and probably a true epileptic. This man gave a history of enuresis up until nine years of age, of stammering from nine to twelve years, of somnambulism from twelve to fifteen years, migraine with an attack of hemianopsia from fifteen to twenty years of age. When about twenty, in getting out of bed he fell and struck his head and remembered nothing until about two hours later when he said he felt sore all over. It is evident that the examination made at the School is the first careful neuropsychic examination this officer has ever

had, else this condition could not have gone so long unrecognized.

"One day at ——— Field Captain Z, an experienced pilot, was going into the air as a passenger. He had just returned from sick leave and had not yet been given the special examination required to be given in all such cases before the pilot is authorized to fly a ship. Presumably it occurred to Captain Z that he might, during the ride, have opportunity to take the controls. In any event, he obtained a stick and placed it in position in the rear cock-pit. The pilot took off and when a few feet up found he could not move the stick the required distance. The ship crashed and the pilot sustained a fractured jaw. Captain Z was not injured. On inspection it was found that the stick the latter had placed was in reverse position, thus accounting for the fact that the pilot could not move his stick as required. Immediately Captain Z fell under the presumption of having been guilty of gross carelessness, but the possibility of some abnormal condition having arisen being conceded, he was sent to the School for examination. The following history was obtained.

After the War Captain Z was ordered from flying Field to service in Germany. About one month after arrival there he was in the air as a passenger when the pilot crashed. Captain Z sustained a severe head trauma, had concussion, and was in hospital a long time. Nearly a year later he was ordered to a general hospital for observation and treatment. There was amnesia reaching back to his departure, one year before, from ——— Field and down to the latter part of his return voyage. He recalled his departure from ——— Field but could not tell how he reached Germany. He could partly describe the pilot with whom he rode to the crash but could not recall his name. In addition he could tell of a few widely separated incidents connected with the period in Germany, that is, there were islets of memory. He could not, however recall his departure from Germany, the Continental journey, or the port from which he sailed. Memory began to return when about half way across the ocean, became more and more clear, and was fully restored by the time he reached the hospital. After some time in the latter hospital he was declared fit for duty and reported at ——— Field.

Captain Z had been at ——— Field nearly one month and the flight surgeon knew, as is expected he should that the Captain had come to be regarded as an inefficient officer. During the examination the Captain said he had believed himself fully recovered when he left the hospital but wondered in view of his experiences since, whether the assumption had been warranted. He remarked that his work had been easy, yet he frequently felt excessively fatigued without adequate cause. For instance, while sitting at his desk of a morning there would be such weariness, that regardless of what the situation might be he would feel compelled to go to his quarters and lie down for a half hour or more. The examination now proceeded along more definitely psychiatric lines and an anxiety neurosis trend was clearly revealed. The special manifestations were: frequent and terrifying dreams of occupational

type, that is, of air accidents; apprehension concerning flying duty as well as any other duty; memory defects; irritability; inability to concentrate; tics; tremors; relaxed peripheral circulation; lowered psychomotor tension; and feelings of self-depreciation and insufficiency expressing an inferiority complex completely unsublimated—no effort at compensation—a defeated psyche. In view of the prolonged amnesia from which he had so recently emerged and the tragic error in placing the rear seat stick, there was need of establishing the presence or absence of recurring minor equivalents in the form of unobtrusive memory lapses or automatisms. In these directions it was clearly shown that the Captain at various times since being at ——— Field, had found himself sitting at his desk or standing some place and wondering how long he had been there. These manifestations were interpreted as lapses of memory, momentary or longer; and the condition or state obtaining at the time of misplacing the stick a disturbance in consciousness analogous in kind. Captain Z was returned to a general hospital and after a period of observation retired for disability."

Now we come to the ear, nose and throat. The importance of diseases and defects of the nose and throat lies in their lowering of resistance of the individual and their aptness of lighting up in acute exacerbations from cold and fatigue. Usually, the defects may be remedied and are only temporary causes of disqualification and are of less importance in the private pilot.

Hearing is not of great importance, though the flyer should be able to hear radio signals and carry on ordinary conversation. In the military services, hearing is more important because the flyer has military duties as well as aeronautical.

Diseases of the ear again reduce resistance but are, of course, of less importance in the private pilot than in the transport or military pilot.

Equilibrium is an important factor, but it has been an overworked subject. The internal ear is not an all-important factor in the flyer. Equilibrium is a function of the whole proprioceptive mechanism and no one factor can be emphasized to the exclusion of the others. The Barany tests so much emphasized during the war are entirely unnecessary in the selection of flyers and in the case of experienced test pilots, give erroneous information. The test pilot becomes immunized to the stimulation of his semicircular canals and corrects for it in his reactions. Furthermore, the semicircular canals are not the most important factor in the flyer's equilibrium but vision is. This is shown conclusively by the fact that a pilot flying blind is unable to fly

level and will go into a spin or spiral power drive whenever his horizon is eliminated, no matter how perfect may be the function of his semicircular canals. The pilot gets a great deal of information from the "feel of the seat," by the sound of the wind on the wires and struts, but when vision is abolished in a fog or cloud he is helpless unless he has learned to disregard his sensations and fly exclusively by instruments. This takes considerable training. Hence, in testing for equilibrium, simple tests of gait, station and self-balancing give us all the information required. The British self-balancing test is a useful one. It consists in having the candidate stand on each foot alternately for 15 seconds with the other leg flexed at the knee and with his eyes closed. If there is any defect of consequence of his semicircular canals or his neuromuscular coördination, it will be brought out by this test.

The work of Ocker, Myers and Crane on blind flying has reawakened the interest in equilibrium and incidentally has confirmed our post-war attitude that the Barany tests are of no value in the selection of flyers. The British, however, always opposed to the Barany tests as such for flyers, have recently found that the Barany chair is useful in eliminating suspected or borderline cases of nervous instability or cardiovascular instability. Such an individual shows marked changes in pulse rate and blood pressure after being turned in the chair. These British tests have been recently adopted by our Army Air Corps.

Finally, we come to the eye. The eye and the nervous system are the two outstanding factors in the physical selection of flyers. Note that I say, "eye" and not "vision." For vision is only one of the many eye factors examined.

That vision is of great importance is attested by all who have any knowledge of aeronautics. Normal vision without correction should be required in all military and transport pilots. For the private pilot moderate vision may be permitted if correctible to normal. Large corrections should not be worn as they are unsatisfactory to center and keep centered and when oil, fog or rain mists the lenses the flyer removing his correction is helpless.

The next factor tested is depth perception or judgment of distance. This is a highly important function as the pilot must judge his distance

from the ground, from trees, buildings, wires, poles and other planes. This function depends primarily on the binocular parallactic angle and is affected by visual acuity—particularly when the vision of the two eyes differs—ocular muscle balance, accommodation, size of retinal image and experience.

Ocular muscle balance is important as the various phorias not only cause diplopia at times but are the cause of headache from fatigue and result in inattention and carelessness. Hyperphoria is the most serious as it is difficult to correct, there being no opposing group of muscles to work on. Exophoria is next in importance and esophoria least important. Esophoria due to divergence weakness is more serious than that due to convergence excess. It matters little for our purposes whether we actually test for heterophoria or do the opposite, namely, test the sursumverging, diverging and converging power of the muscles.

That ocular muscle balance is important is evidenced by the fact that faulty landings have in many cases been shown to be the result of poor muscle balance. When the latter is corrected the landings improve.

A certain range of accommodation is necessary as the pilot must change his focus from far to near and back in watching the horizon and his instrument board.

The fields of vision are important as the ability to pick up an object out of the "tail of the eye" is necessary. Planes traveling at speeds of 150 miles an hour do not take long to meet from the time they are first seen, hence it is important that they be picked up by the eye as early as possible. Therefore, the visual fields are tested by the perimeter.

Color vision is important because of the colored lights on airdromes and ships, colored signal panels and flares and because the different shades of brown and green on the ground indicate to a certain extent the character of the terrain over which the pilot is flying.

Finally, elimination of ocular disease is made by inspection, palpation and examination of the fundus by the ophthalmoscope.

I believe it will be agreed that the points covered, while they do not require the services of an expert ophthalmologist, desirable as that might be, they do require that the examiner have more knowledge of and technic in ophthal-

mological procedures than is possessed by the average physician. By the time we are through we have a pretty good line on the physical limitations of the applicant.

That such is necessary is clearly evidenced by the statistical studies made in the Medical Section of the Department of Commerce. That physical defect is a deterrent to flying ability is shown by the fact that in a study of over 9,000 students, it was found that the physically perfect had twice the chance of learning to fly that had the students whose physical condition restricted them to the lowest grade of license. The applicants disqualified for all grades were shown to have an almost negligible chance of learning to fly. This work has recently been repeated on over 20,000 students, and while the figures are not yet available, Dr. Cooper has informed me that there is no material difference. In the first study, all defects, no matter how slight, were listed together. In the recent study, defects have been studied individually, in an effort to learn the relative importance of various defects.

Another study made on all aircraft accidents in licensed pilots showed the physically perfect group had far fewer accidents, in proportion to their numbers, than did the physically defective group. In fact, the defective group showed half again as many accidents as would be expected from the number in the group. The defective group also showed a higher rate of fatality than the normal group. Although I have used the word "defective," a better term would be "deviation from the normal," as many of these so-called defects were very minor in character and could hardly, in themselves, be considered as a potential cause of accidents. If all these very minor deviations were removed from the defective and placed in the normal group, the figures would be still more imposing in favor of the physically normal pilot.

Now since deviation from the physical normal does interfere with learning to fly and is a potential cause of accidents, the question at once arises why is it so? There are three possibilities. One is that they directly affect flying ability by actual physical handicap. For example, a stiff ankle as already cited might result in the brakes being unevenly applied and the ship ground-looping and turning over. Second, they might handicap indirectly through their effect on aptitude. For example, a slow reactor might respond

to a crisis inadequately or too late to save the situation. Thirdly, is it not possible that certain defects of a congenital rather than an acquired nature may indicate, as well, a lack of something in the higher functions, not readily assessable but essential to the mastery of this task which is new to racial experience? This last theory, so far as I know, was first suggested by Longacre. That flying is a new racial experience and one for which man was not intended is self-evident. Therefore, it is reasonable to suppose that something is essential which is not required in other experiences.

We do know that accidents from mechanical and structural causes are on the wane and constitute but a small proportion of the whole. We also know that the pilot is responsible for about 60% of the accidents. Therefore, in our campaign to reduce accidents, our major attention should be concentrated on the pilot. That our physical standards are not too low is evident from the statistics quoted. The raising of the physical standards and the refusal to grant waivers for physical defects will help. However, such steps would equalize the accident rate in the normal and defective groups, but we still would have the accident rate that now occurs among the apparently physically perfect pilots. Maintenance of the physical condition of the pilot will aid as we shall see in a moment, but it appears that there is also a field in the selection of the pilot not yet satisfactorily covered. For example, we know that many apparently physically normal individuals are never able to learn to fly. For want of a better term, we may refer to this as lack of flying aptitude or aeronautical adaptability. Others may learn but become only mediocre pilots and seem to possess this flying aptitude only in a minor degree. We often see statements or advertisements to the effect that anyone can learn to fly. This, to put it bluntly, is pure, unadulterated "bunk." Any experienced instructor will testify to that. Much unsatisfactory material is eliminated by our careful physical examinations as indicated already, but is there not some way of assessing the physically normal individuals as possessing or not the required aptitude, besides the trial and error method? That any test would do so in 100% of cases is unreasonable to expect. That some way may be determined that will help is a probability but needs much more work and study

before becoming finally adopted. Various reaction time tests have been or are in use in various countries and for the most part have been discarded as worthless. There are only two that give enough promise to be worth our discussing here. One is the Reid reaction apparatus in use in the Royal Air Force in England. Briefly, this apparatus consists of the cockpit of a plane fitted with control stick and rudder bar which are connected with a recording mechanism and with a series of colored lamps which indicate displacement of the controls from a central or neutral position. The controls are placed in an extreme position and the length of time taken to centralize them is recorded in fractions of a second. The candidate is given a short practice period and then tested. During one of the tests, a Klaxon horn is suddenly blown and its effect noted on that and succeeding trials. The so-called potential flyer has a low reaction time and is only slightly disturbed by the emotional stimulus while the unsatisfactory group has a much slower reaction time and is completely upset by the emotional stimulus. By testing students on this apparatus and sealing the records, then having them all take training, it was found that after comparing the records none of the unsatisfactory group ever learned to fly; that the border-line group either failed or else took an excessive time before soloing, and the satisfactory group all had no difficulty. The British claim a correlation of 90% between the results of the test and actual flying experience. It is still undergoing research but looks promising. Whether or not we should obtain equally satisfying results with our different methods of training is a question that can only be decided after considerable research.

The other method worth mentioning is the Ruggles Orientator test. This is in use in the military services in this country. The apparatus consists of the cockpit of a plane equipped with controls and suspended in three concentric rings. By means of motors the cockpit can be put through any evolution except straight up, down or forward motion. The candidate is given a course of training in this machine and the results evaluated by the instructor. There is no recording mechanism and the result is, therefore, not a graphic one, but one of opinion. There is considerable dispute over its value.

That covers in a brief way the selection of the

flyer. His classification is a matter of grading him on his reaction to the effects of high altitude, and is largely a military, war-time measure. I will not go into it here.

The third subheading of our subject deals with the maintenance of the flyer. Having gone to considerable trouble to select our flyer, we ought to take at least as much trouble to maintain him in as good condition as we found him. This can be accomplished in part by periodic physical examinations. By this means, incipient conditions can be detected and aborted before they become serious. Unfortunately, however, because a man is physically fit today, is no sign that he will be next month, next week or even tomorrow. Minor conditions of no importance on the ground may prove of serious consequence in the air. Too much flying, too little exercise and too much dissipation result in chronic fatigue or "staleness" in the flyer. This condition is nothing more or less than neurocirculatory asthenia, and is evidenced by the usual symptoms plus a falling off in flying ability and interest. Its cure is removal from everything pertaining to flying and a general building up of physical condition. With proper medical supervision, staleness can be prevented and should not reach the stage of treatment. The Army and Navy have such medical supervision and gradually air transport lines are beginning to appreciate its importance and are adding flight surgeons to their supervisory personnel. Physical fitness is more important in flying than in any other occupation. Plenty of rest, freedom from dissipation, restriction of the number of hours of flying, both per day and per month, and regular exercise will accomplish the desired end.

As to diseases to which flyers are prone, we find that diseases of the respiratory tract, particularly of the upper air passages, are common because of the exposure to cold and fatigue; conjunctivitis from leaky goggles and glare, eye muscle troubles from defective goggle lenses, middle ear affections, particularly in altitude work, are all fairly common. Neurocirculatory asthenia as already indicated is common and gastro-intestinal disturbances are prevalent. These latter are perhaps due to irregular habits of eating and to the inhibition of digestion from emotional excitability accompanying flying and other psychic causes.

There are two other phases of flying with

which the flight surgeon is concerned—namely, the effects of high altitude and high speed. Altitude classification has been mentioned and dismissed. However, the physiological effects of high altitude should be understood. There is time to go into the subject but briefly here. The effects of high altitude are due to oxygen want resulting from the decreased partial pressure of oxygen in the atmosphere at high levels. For example, the partial pressure of oxygen at sea level is 159 mm. of Hg. At 20,000 feet it has become reduced to 74 mm. The partial pressure in the alveoli is, of course, less,—at sea level being 106 mm. and 20,000 feet it is only 35 mm. In an effort to compensate, man breathes more deeply and the heart beats more rapidly. If he stays up long enough there is a concentration of the blood or possibly a reserve supply of corpuscles is thrown into circulation. The deep breathing washes the carbon dioxide out of the blood and disturbs the acid-base equilibrium resulting in an alkalosis. This reduction in carbon dioxide results in a lowered stimulus to oxygen dissociation in the tissues, so that the individual not only is getting insufficient oxygen in his blood but has difficulty in letting go of it to his tissues. At about 25,000 feet the average person becomes unconscious without oxygen. The use of oxygen by increasing the percentage in the air breathed automatically increases the partial pressure of oxygen in the alveoli and restores the individual to consciousness and up to a certain height to efficiency. There is a limit, however, even with oxygen. Since life depends on the partial pressure of oxygen and not on its percentage, we may go so high that even though the air breathed is pure oxygen, its pressure will be too low to sustain life. This critical line is somewhere between 42,000 and 45,000 feet. At this level the atmospheric pressure falls below 100 mm. of Hg. Inspired air absorbs 47 mm. of water vapor pressure leaving us only about 50 mm. of possible oxygen pressure in the alveoli if pure oxygen is breathed. This, however, becomes reduced by dilution in the air passages with atmospheric air. The carbon dioxide pressure has fallen due to the forced breathing as we have seen. 40 mm. of oxygen pressure in the alveoli is the least pressure with which man can survive for more than a few minutes and then only when the CO_2 pressure is kept up. Even then he is cyanotic

and suffering from extreme oxygen want. When these minimum conditions fail to be met, the man dies even though breathing pure oxygen.

Of the effects of high speed, we do not know very much. We do know that turns at high speed cause unconsciousness due probably to cerebral anemia from centrifugal force. We also know that brain injury may occur from the same cause. Straight ahead speeds where the pilot is well protected in the cockpit are stood surprisingly well. Sudden alterations of speed or sudden changes of direction are dangerous. A straight ahead speed of 365 miles per hour has been attained. As to turns, sharp turns at 200 miles an hour have caused momentary unconsciousness. One pilot after pulling his ship up following a dive at 250 miles an hour received retinal hemorrhages and possible brain damage.

The effects of cold and wind are only slightly understood. We do know, however, the pilot may subject his physical mechanism to terrific speed, high altitude, intense glare, bitter cold, violent gales, constant changes of equilibrium and conditions of emotional stress. Certainly, therefore, he should be carefully selected and supervised from the physical standpoint.

There is much work for the medical profession still to do. In closing, I will quote the final paragraph of a previous paper on this subject:

"The part medicine plays in flying is constantly becoming greater, and I am glad to say, increasingly recognized. It behooves us, as physicians, to keep up with the progress of this new science of aeronautics and lend all the forces and facilities of our profession to its further advancement."

PUBLIC RELATIONS OF THE COUNTY MEDICAL SOCIETY*

NATHAN SMITH DAVIS III, A.B., M.D., F.A.C.P.

Secretary Chicago Medical Society

CHICAGO

Physicians are gradually coming to appreciate the importance of public relations. The American Medical Association through pamphlets, broadcasting, Hygeia, etc., is doing its best to improve the relations between the medical profession and the general public and is cooperating with other groups such as the Committee on the

Costs of Medical Care to accomplish this purpose. The Illinois State Medical Society has through its Educational Committee done a remarkable work for the medical profession of this state. However, we can not turn all such work over to the national and state societies. Many problems arise in counties that are distinctly local problems and must be handled locally. In fact, organizations seeking the approval of the parent organizations for public health, hospital and similar projects contemplated for various localities are referred by the American Medical Association and the state society to the County Society with the information that they must deal with the local medical organization.

What are the County Societies doing when such public health or hospital programs are presented? It seems that the county society, after rather superficial investigation, is apt to formulate resolutions sometimes favoring, more often opposing such contemplated activities; adopt the resolutions and then drop the matter entirely. Many such programs are continued whether or not they are approved by the county society and become most unpopular with the medical profession whose members make no effort to control them. It appears that the passing of such resolutions is of little value.

Would it not be a much better policy for the county medical society to refer such programs to special or standing committees composed of men who have the confidence of the society, who understand how the members feel about such activities, and who also have the confidence of the laymen and women interested in the program? Such special or standing committee should be able to persuade such lay group:

1. That the profession appreciates the situation in which they are especially interested and desires their cooperation but feels that such activities should be under the direction of the medical profession;
2. That their program will not really succeed if it has not the backing of the medical profession;
3. That such program will not be of real value to the people if it is inimical to the welfare of the medical profession or if it results in an increase of the costs of illness to those not directly benefited thereby.

But the county society should not be satisfied with merely attempting to regulate the activities of lay groups who are interested in public health. It should take the initiative itself and undertake

*Read before the Secretaries Conference of Illinois State Medical Society, May 5, 1931.

the education of its own members and the public in the necessity of promoting public health activities in a proper manner. The practice of preventive medicine, health examinations, prophylactic inoculations, etc. must be encouraged and the physician is in a much better position to do this than is the enthusiastic philanthropist or the social worker.

Furthermore, the public must be taught to appreciate the fact that physicians as a class are not wealthy, that it costs the doctor as much to live as it does any one else; that expenses in the practice of medicine are high; that his credit is no better than that of his patients, if it is as good; that the net incomes of physicians average in rural districts about \$3,000; in urban about \$4,000; that the 150,000 physicians of the United States are donating at least \$365,000,000 worth of services annually to the 500,000 persons cared for daily who pay nothing for such services (Charles Gordon Heyd, B.A., M. D., Inaugural Address of the President of the Medical Society of the County of New York, January 26, 1931); that these 150,000 physicians have net annual incomes totaling between \$450,000,000 and \$600,000,000 derived from those able to pay for medical services. What other group of 150,000 in the population of the United States donates in service or money or goods a corresponding amount?

If through the efforts of the politicians and the philanthropically inclined, the number of those considered worthy of free medical service is increased to 750,000 to 1,000,000 daily, the value of the services donated by the medical profession will be increased to \$547,500,000 to \$730,000,000 annually and unless fees charged those able to pay are materially increased, physicians' incomes will be decidedly diminished: diminished to such an extent that the doctor will scarcely be able to net as much as does the "white collar worker" about whom the philanthropists are worrying so much. It appears that these philanthropists will soon have the bulk of the medical profession on their hands if they fail to make provision for paying for the medical services rendered those who are unable to pay for such services themselves. Such pauperization of the medical profession would be most detrimental to the health of the whole population, including the philanthropists, for competent men would not be attracted to the profession; the

care of the sick and the prevention of disease would be left in the hands of those unqualified to continue and extend the work that has been so ably carried on by the members of the medical profession as it has been and is now constituted.

Furthermore, the public must be educated to appreciate the fact that they now receive much better medical service than they did in the old days of the general practitioner. With the vast expansion of medical knowledge that has come about in the past century or so, it has become impossible for any one man to acquire the knowledge and skill to properly care for all types of illness. Specialism has come not because it is more lucrative but because the increase in medical knowledge has made it necessary. It has made medical service more expensive and the members of the profession must endeavor to devise ways and means for reducing the costs of practicing medicine. Group practice seems to be the most efficient method of reducing these costs.

While the general practitioner has by force of necessity almost become extinct, the "family doctor," who has generally been considered the same, need not and in fact, should not also disappear. The "family doctor" should be an internist but he may be any variety of specialist. He is the physician in whom the family have the greatest confidence; who is first consulted when a member of the family is ill. If the illness comes in his field, he of course, takes care of it; if in another, he refers the patient to an associate who is able to properly care for that illness. Neither the public nor the profession fully appreciate this situation and must be taught that the "family doctor" is as necessary today as he ever was, even though, if the best of service is to be rendered, he should not be a general practitioner in the old sense of the word. Today a group, including those qualified as specialists in all branches of medicine and dentistry, is needed to furnish the best of medical service to all members of a family under all circumstances but any one of this group with the exception of the dentists, may be the "family doctor."

More is being spent today for medicines that are prescribed by the patient himself, by his friends or by the druggist than is spent for medicine prescribed by physicians. In fact, the total amount spent for medicines of all sorts is about

what is spent for the services of physicians. Much such lay prescribing is actually harmful and in the long run costs much more than it does to consult a physician who is able to ascertain what is wrong with the patient and prescribe proper treatment whether it be medicinal, dietary, physiotherapeutic, surgical or correct methods of living and eating. An educational campaign is needed to convince the public that such medication is costly, dangerous and benefits chiefly the druggist who thus disposes of his stock of preparations that are rarely if ever prescribed by physicians, the manufacturer of patent medicines and those who contract for or carry the advertisements of such products. Such a campaign should be nation wide to compete with the patent medicine advertising and so should be carried on by the American Medical Association but the county society and its members must all cooperate if it is to be successful. In this connection, cooperation with the local druggists to promote the use of U.S.P., N.F., and N.N.R. preparations is of great value. Also the members of the county society should bring pressure to bear on the editors of the local newspapers and periodicals to get them to discontinue the advertising of patent medicines and other pseudoscientific methods of treatment.

There are many other problems that come before county medical societies which are of general interest. For example, questions regarding the legality of practice of medicine by corporations; the need for governmental or endowed hospitals of one sort or another and for free dispensaries; the activities of health departments and visiting nurses; the activities of insurance companies and their policies with respect to contracting for medical service, etc. There is not time to even mention many of these problems.

In some instances the national and state societies can be and are of great assistance in their solution but these parent organizations are able to make local contacts only over the radio or by mail. Only those who most need education as to the medical point of view, are the ones who do not listen to the broadcasts of the American Medical Association or the Illinois State Medical Society, who do not study literature sent out by these organizations. Personal contact is of the greatest importance in this work. The parent societies are able to make such contacts only through the members of the local society.

Every county society should have as one of its most important and active committees a Public Relations Committee, composed of men who have the confidence both of the profession and of the public. The duties of such a committee would be: 1. Cooperation with the proper councils or committees of the parent societies in the spreading of real information regarding the diagnosis and treatment of disease and its prevention; 2. Cooperation with local governmental or charitable public health activities with the view to directing them so that they will be of real value both to the public and the profession whose interests are so intimately interwoven; 3. The formation of a constructive public relations program which will anticipate results and so assist in the determination and formation of public policies.

Physicians, whether general practitioners or specialists, have not the knowledge or training needed to put such a program most effectively before the public. They should, with the assistance of public health authorities, sociologists, economists, philanthropists and social workers, formulate the program. But, just as from time to time they seek the services of specialists in some field of medicine that their patients may be most adequately cared for, they must seek the services of specialists in public relations if their program is to receive the enthusiastic support of the public without which it can not be accomplished. In seeking the services of public relations counsel, the medical profession will find that laymen are not as altruistic as are physicians; that laymen demand pay for the promotion of public health programs even though physicians are expected to do the work without remuneration. However, if the medical profession is to survive, it must follow the example of philanthropists, welfare societies and the like, to say nothing of big business, and provide funds to be used in the employment not of the least expensive but of the most able public relations counsel.

DISCUSSION

Dr. E. E. Perisho, Streator: There seems to be two angles to this question; first, as to the benefit the doctors have rendered to the public; the other, as to the value of the county society to the doctor himself. In the first place we realize that a large percentage of public health work is done by the general practitioner. He is on friendly terms and in personal contact with his patients, and he gets the patient to under-

stand the need of these things, and he can best put them over. It is the doctor's business to educate the public as to what the doctor has done and what is being done for the human race in comparison with what the quacks are doing. That is the big element. Most people like to know that their doctor belongs to the county society and the state society. The public is constantly hearing about health movements and naturally believes the one it hears most about. If we keep still they will drift to the various cults. We are in a position to do something about it. We must educate the public as to what it costs the doctor to live and do this work. I have heard talks over the radio about the cost of a medical education being about \$20,000, and about ten or fifteen years of a man's life; The public can readily understand that no man can practice medicine for fifty cents an hour—or be put on the wage basis of common labor.

Now, as to what the medical society means to the doctor; it is a school, it is a postgraduate course, it is a place for the man who is in the country to meet with his fellow practitioners and find out what is taking place, what is going on in the medical world. We must combine to fight the elements which may destroy our business. We can and we should be prepared to talk to our patients on these subjects and the way to be prepared is to keep in touch with all the phases of our profession. What is good for us is beneficial to the public.

RELATION OF ENDOCRINE DISORDERS TO INDUSTRIAL MEDICINE*

JAMES H. HUTTON, M.D.

CHICAGO

There are certain misapprehensions among some members of the profession that tend to obstruct progress in our study of endocrine disorders, whether they occur in industry or private practice. For example, it is believed that endocrine disorders are strange, rare and peculiar syndromes, which when they do occur, mark their victims by some unusual physical characteristics that set them apart from their fellows. When they occur in lesser degree, it is believed that they are unrecognizable, or, if recognized, that nothing can be done therapeutically for them.

The endocrines are really the stepchildren of medicine. In other fields we are entreated to make a diagnosis early, and to make every effort to stop the progress of disease before it incapacitates the patient, but in the field of endocrine disorders we are forbidden to attempt a diagnosis until the condition is of such a degree that

doubt is no longer possible and treatment is entirely futile.

There are roughly, twelve endocrine glands. Any one of four of them are essential to life. Others differentiate us from vegetative organisms. Others are necessary for the continuation of the species, and the same add to our joy in life. They are as intimately a part of the body as the cardiovascular system or the gastrointestinal tract. As such, they are amenable to the same laws that govern the rest of the body, and are influenced by infection and trauma, either physical or emotional, the same as other parts of the body.

Some idea of the frequency with which endocrine disorders occur may be gained by recalling that one per cent. of the population of the United States has diabetes. One of the things we know most certainly about diabetes is that it is associated with some disturbance of the internal secretion of the pancreas.

Goiter is so prevalent in this country that it is regarded by some as a public health problem. For every case of toxic goiter there are probably five or more cases of thyroid deficiency. While there is some discussion as to the proper method of treatment for toxic goiter—and no treatment is entirely satisfactory—for thyroid deficiency we have a specific treatment which is almost 100 per cent. satisfactory. There is considerable resemblance between diabetes and exophthalmic goiter. Hyperglycemia and glycosuria are constant in one and frequent in the other. Emaciation with excessive appetite is common to both. Acidosis is common to both. Increased nitrogen excretion, a low respiratory quotient, and excessive sugar mobilization occur in both. While the conversion of sugar to fat and to glycogen is defective in both conditions. Incidentally, the use of insulin is beneficial in both conditions. It reduces body temperature and diminishes the excretion of nitrogen, inorganic phosphates, and potassium. In my opinion, there is a close resemblance between Graves' disease and hypoadrenia, and it is more than likely that many so-called cases of Graves' disease could be saved from operation by early and adequate treatment with suprarenal preparations.

Every woman is a candidate for ovarian insufficiency and if she lives long enough, is bound to be a victim of it. The Committee on the Cost

*Address before Illinois Society of Industrial Medicine & Surgery, Joliet, Ill., May 20, 1930.

of Medical Care found that one large industry in this country reported that women employees were absent from work twice as many days in the year as were the male employees, and opined that this was due to menstrual disturbances. Now, not all menstrual disorders are due to ovarian insufficiency, but a considerable percentage of them are. It is likely that the number of days lost from work by women could be reduced by at least 25 per cent. if a careful examination was made into this question and the proper therapy instituted in those cases found to be suffering from ovarian insufficiency.

ETIOLOGY OF OVARIAN INSUFFICIENCY

1. Heredity.
2. Infections:
 - a. Local, in the pelvis, as gonorrhea, puerperal.
 - b. General
 - Flu,
 - Tuberculosis.
 - Syphilis.
3. Trauma:
 - Such as operations on or about the ovaries.
4. Disturbances of other Endocrine Glands:
 - Thyroid.
 - Pituitary anterior lobe.
 - Thymus.
 - Adrenal cortex.

SYMPTOMS OF OVARIAN INSUFFICIENCY

Dysmenorrhea particularly pain beginning some days before the period and lasting throughout the flow.

Nausea and vomiting occurring near the period and being particularly frequent in the morning; resembling the nausea and vomiting of the early months of pregnancy.

Headache occurring in connection with the periods. Fishbaugh³ says that it is not characteristic, as to location or character, but it is of course associated with other signs and symptoms of ovarian insufficiency. These headaches do not usually occur during pregnancy and are sometimes relieved by inducing the menopause artificially.

Irregularity in the occurrence and character of the flow, that is, two periods may occur at regular intervals, but the next may be separated by several weeks; or one period may be normal in character and amount and the next be quite scant and painful, associated with many disagreeable symptoms, particularly nervousness and mental depression.

Hot flashes are of course well known.

Cold and sore throat occurring with each period. This is a symptom which the nose and

throat specialists are apt to note much more frequently than the rest of us.

Numbness and tingling of the extremities is a frequent complaint, particularly at the menopause. Goldstine² and Fogelson have recently reported considerable success in the treatment of irregular uterine bleeding with an extract of placenta. Goldstine¹ tells me he has cured 31 cases by this method in which he would formerly have done a hysterectomy.

Many ovarian preparations are on the market. Ovarian substance is the whole ovary including the corpus luteum; ovarian residue is that part of the ovary remaining after the manufacturer has taken away the corpus luteum; Various preparations of the corpus luteum itself. These substances can be given by mouth or, subcutaneously, in the form of aqueous and lipid extracts. Estrogen is a preparation of human placenta which contains the estrus producing hormone. Amniotin is a preparation from the amniotic fluid, it also contains the estrus producing principle.

Hot flashes are not always cured by ovarian productions. Sometimes they are decidedly aggravated by such treatment. The latter is true, particularly in the later part of the menopause. It would seem that hot flashes occur when the decline in ovarian function reaches a certain level and that they cease when the decline goes still farther. In such cases the use of ovarian products seem to restore enough ovarian function to bring back or make worse the hot flashes.

There is probably no procedure in medicine which will increase the efficiency of a worker more than the proper correction of ovarian insufficiency. Not all menstrual and ovarian disorders are primarily in the pelvis. Many of them are secondary to pituitary disfunction, particularly of the anterior lobe. Evans and his co-workers have demonstrated that the anterior lobe contains two hormones, one of which stimulates growth and the other influences the sexual apparatus, its growth and function, particularly in the female.

The recognition of pituitary disorder is usually more difficult than the recognition of ovarian insufficiency, as this is made on the history of the symptomology and the exclusion of other conditions, particularly infections, either focal, or general, like tuberculosis or syphilis and

local pelvic disorders. Laboratory tests give very little direct evidence. The following case will emphasize a few of the points I have just mentioned:

5-a. Mrs. P., aged 32 years, reported Sept. 25, 1926.

Complaints: 1. Feeling as if about to faint. This sensation began about two weeks ago, lasts 15 or 20 minutes and occurs several times daily. This is preceded by profuse perspiration and is more apt to occur when she is hungry. She has a good appetite and is compelled to eat frequently.

2. *Short of breath* so that she can hardly climb three flight of stairs.

3. *Very sensitive* to cold and enjoys hot weather.

4. *Loss of weight*, 5 lbs., in the past few weeks.

5. *Hands and feet* always cold and frequently numb.

Past History: Similar attacks two years ago when she actually fainted several times. The first attack of this sort occurred about age twenty and they recurred about twice a year since. She lost 50 lbs. in the first three months after marriage. A goiter was dissolved at puberty.

Family history without significance.

Menstrual: Began at the age of 22, the next period one year later. They now occur 21 to 35 days apart and occasionally one is missed. Pain occurs before and during the periods, which are scant, lasting a day and a half. During the periods she is blue, nervous, and depressed.

Examination: T. 99, p. 84, B. P. 125/80, wt. 100 B. M. R.—14%. Slight tremor hands and tongue, quadriceps weakness. The thyroid was not enlarged, no thrill nor bruit was present. There was some pigmentation of the skin which was dry and rough.

Height, 67 in.; lower measurement 36 cm, upper 31 cm, hands long and thin, fingers long and tapering. Uterus retrodisplaced with a tender ovary back of it. Blood count and blood chemistry and urine were all normal.

Diagnosis: Ovarian insufficiency beginning Graves' disease or hypoadrenia.

Treatment: Ovarian residue subcutaneously and by mouth and suprarenal grs. 5 t. i. d. Liquids and food were forced.

Results: Oct. 18, 1926: Feels very much better soon after getting ovarian residue.

Jan. 17, 1927: Better than she has been for years. Is taking only ovarian residue and suprarenal. Signs of Graves' disease have all gone.

Dec. 8, 1927: Slight recurrence of some of the old symptoms; medicine renewed.

April 13, 1928: Feeling quite all right.

Thyroid deficiency is a very common disorder in this locality. Its signs and symptoms are matters of common knowledge. To refresh your memory I will briefly enumerate them;

HYPO-THYROIDISM

Subjective complaints:

Loss of strength and endurance of "pep."

Neuritis-like pains sometimes resemble those of tabes.

Retarded mental processes.

Cold extremities and sensitiveness to cold.

Catarrh of the upper respiratory tract—asthma.

Stiffness of muscles and joints, worse in the morning.

Physical findings:

The skin is dry. In color it is pale, like alabaster or yellowish like parchment, with a flush over the malar prominences. The hair is dry and brittle on the head, scant in the axillary and pubic regions and frequently missing on the extremities. The outer third of the eye brows are thin. The nails are brittle, ridged and contain white spots. The teeth are of poor quality. If the condition began in infancy they are irregularly placed. The bones are slow in developing and the epiphyseal lines are slow in closing. This condition sometimes causes the slow healing of fractures.

Distribution of fat:

Padding on the dorsum of the hands and feet, fingers and toes and in the supra-clavicular spaces and dorsal cervical area. Edema of the lids with narrowing of the palpebral fissures. Thickening of the lips. Slow pulse, slow respiratory rate and lowered basal metabolic rate.

Lawrence⁴ says "The symptoms of fatigability, irritability, and depression are often called neurasthenia. These symptoms with bradycardia, subnormal temperature, hypotension, and an increase in the number of lymphocytes in the blood should raise the suspicion of the thyroid failure."

Not all cases of thyroid failure give rise to the findings mentioned above. Lawrence⁴ believes that failure during childhood or adolescence does not produce myxedema. I certainly agree with him that the degree to which basal metabolism is depressed is not an indication of the amount of thyroid which the patient can tolerate. I usually begin with 1/5 grain 4 times i. d., and increase or decrease the dose by 1/5 grain per day, until I determine the amount of thyroid that can be tolerated. I then decrease the dose by about one-third and continue the dosage. With Lawrence⁵ and others I do not believe that thyroid has a specific directional influence on blood pressure as I have seen low blood pressure increased on thyroid medication and I have seen a number of cases decreased materially on the same medication. Lawrence⁵ also states: "The relation between depression of basal metabolic rate and pulse rate is not constant. While bradycardia generally accompanies depression of the basal metabolic rate due to thyroid failure, there is a significantly large number of exceptions to this rule." With this I can fully agree. He also states: "In therapeutic doses, thyroid extract in hypothyroidism has two effects upon the heart. It increases its work promptly and rapidly, and improves its nutrition slowly. Therefore, signs of cardiac insufficiency do not contraindicate its administration but do emphasize the need for

care in its use and adequate curtailment of the patient's activity during the period of readjustment of metabolism." That also accords with my experience. A common finding in thyroid deficiency is a very low pulse pressure. I frequently see a systolic of 100 with a diasystolic of 80. The proper administration of thyroid in such cases bring about an increase in pulse pressure, usually by increasing the systolic. A low basal metabolic rate of itself is not sufficient for a diagnosis of hypothyroidism. I feel sure that latent T. B. and other foci of infections are accompanied many times by a low B.M.R. I had under observation for fifteen months a very intelligent business man whose rate varied from —20 to —28. He could not tolerate thyroid. We were unable to change the basal rate materially. He gave a positive response to old tuberculin.

Beck⁶ reports 100 consecutive cases of thyroid deficiency which exhibited various urologic lesions. The symptoms in order of frequency were nocturia, pollakuria, dysuria, oliguria, and incontinence. The urine showed a wide variety in findings, an excess of bladder epithelium being by far the most common feature.

Years ago Hertoghe emphasized the fact that in thyroid deficiency the bladder epithelium is shed prematurely, exposing the walls to the irritating action of acid urine and so leading to many of the symptoms enumerated by Beck. Many of these patients are condemned as neurasthenics.

A good many cases of arthritis have an endocrine factor. Some cases have hypertension. This is well illustrated in the following case:

Mr. D., aged 54 years, reported April 18, 1922.

Complaints: 1. Backache, occurring about 10:00 A. M., began two weeks ago.

2. Easily tired out, is "all in" by 11:00 A. M. No headache, no shortness of breath, no nocturia.

Past: Had a backache ten years ago, relieved by local application.

Examination: T. 98, P. 75, B. P., 175/60, B. M. R.—6%, polynuclears 61%, otherwise the blood count was normal. Phenolsulphonephthalein output 45% in two hours, urine negative. Wassermann negative. Bad teeth, questionable tonsils, sensitive spine, with limited motion especially anterior posteriorly; obese, wt., 185 lbs., otherwise negative, except signs of hypothyroidism, padding on hands and feet, and in supraclavicular and dorsal cervical regions.

Scant hair suit on head, brows, axillae and extremities.

Malar flush, dry skin, brittle nails.

Diagnosis: The x-ray showed osteo-arthritis of spine advanced. General obesity, hypertension, hypothyroidism, and hypopituitarism, focal infection.

Treatment: Extracted teeth, reduced diet, especially proteins, analgesics, physio-therapy, iodides, etc. Thyroid gr. 1, t. i. d.

Results: April 24: p. 60, B. P. 190/110.

July 1: P. 70, B. P. 150/100, wt., 178.

Sept. 1, 1922: P. 90, B. P. 125/80, wt., 159. Very little backache, and much less tired. The thyroid had been increased up to 10 grains daily.

This man showed signs of both hypothyroidism and hypopituitarism. Such cases usually show a basal rate near normal and yet can tolerate considerable doses of thyroid.

Oct. 4, 1922: P. 70, B. P. 135/85, wt., 153, thyroid grs. 4 per day.

Mar. 17, 1923: B. P. 150/100 following heavy proteid diet. Promptly improved on a low proteid diet.

Mar. 29, 1923: P. 76, B. P. 140/80, feeling fine.

July 9, 1927: P. 66, B. P., 220/105, wt., 177, obese and general signs of hypothyroidism marked, spine stiff but not painful.

Treatment: Thyroid 7 grains daily, low proteid diet and general reduction in diet.

Aug. 30, 1927: P. 72, B. P., 155/80, wt., 155.

Jan. 1, 1928: B. P., 155/80, no gain in weight; has been on moderate diet especially low in proteid.

May 15, 1930: B. P. 150/100.

Cecil⁷ devotes one chapter to a discussion of arthritis of the menopause. In the light of my own experience, I feel sure that this is quite a common condition.

In conclusion, 1. Ovarian insufficiency is undoubtedly a cause of much absenteeism among female employees. This absenteeism could undoubtedly be reduced by a considerable percentage if industry surveyed its women workers and instituted the proper treatment.

2. Thyroid deficiency is common, particularly in this climate and is to blame for the condition of many workers who are able to deliver only a few hours of efficient work per day because of their easy fatigability and low physical reserve.

3. Many neurasthenics are victims of undiscovered, many times unsought for endocrine disorders. Cases of hypertension, particularly in the obese, should have the benefit of a careful search for endocrine disorder.

4. Many cardiac disturbances, particularly auricular fibrillation, myocarditis and extrasystoles are due to endocrine disorders, particularly thyroid, ovarian and adrenal.

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WILLIAM BEAUMONT*

C. I. REED, Department of Physiology,
University of Illinois, College of Medicine

CHICAGO

This account of the pioneer, whom Osler called "The backwoods physiologist," is prompted not so much by an intent to review his contributions as to present a picture of his life and the vicissitudes and discouragements which he encountered. Meagerly equipped, both in training and experience, he grasped readily the fundamental significance of a scientific problem. There are abundant records of similar opportunities to others before his time, but Beaumont alone took advantage of opportunity and under the most trying circumstances, made scientific contributions that have placed him among the immortals. Most of his work was done in a frontier army post, hundreds of miles from any laboratory and thousands of miles from any colleague who could assist or encourage him, and this in an age when communication was so slow and tedious as to appall one accustomed to the modern age of speed.

William Beaumont was born at Lebanon, Conn., in 1785, the third of a family of nine children. There is only one incident of importance in the meager record of his boyhood. As a result of a dare by a playmate, he stood near a cannon that was fired during a celebration. The concussion so injured the auditory apparatus that his audition became progressively impaired until in later years he could enjoy his favorite diversion of piano music only by placing his teeth against the top of the case.

Dissatisfied with his quiet life, William left home just after reaching his majority, without any objective, and wandered about over New England during an entire winter, finally arriving

at Champlain, N. Y., in the spring of 1807. During this pilgrimage he made the acquaintance of a certain Dr. Pomeroy of Burlington, Vt., from which event dates his interest in medicine.

He taught school at Champlain for three years, varying his activities by keeping a store. In 1810 he went to St. Albans, Vt., as apprentice under Dr. Benjamin Chandler, a very able physician and surgeon. While he read widely, most of his training was bedside experience. The only available dissection material was obtained after amputations. There exists a notebook prepared during this period, containing prescriptions, descriptions of diseases and extracts from some of the works he had read. This notebook shows clearly his ability as a careful, accurate observer and his comments give evidence of the scientific spirit that was later to make him world renowned.

Finally, on the 2nd Tuesday of June, 1812, the Third Medical Society of the state of Vermont granted him a license to practice. A little later he presented himself to General Dearborn at Plattsburgh and after serving as brevet surgeon's mate for a time was commissioned by the President. His diary shows that he was at Sackett's Harbor, York, Ft. George and Plattsburgh. In the latter engagement he was commended for bravery.

At the close of the war Beaumont was retained in service in preference to many older officers. However, he soon resigned and entered private practice in Plattsburgh, augmenting his income by operating a grocery and drug store for a year, after which he devoted his entire time to practice.

When Joseph Lovell became Surgeon General he persuaded Beaumont to accept a commission as post surgeon and in 1821 he was ordered to Ft. Mackinac. Here was located one of the important posts of the American Fur Company. At this time two of the Company's employes were Gurdon A. Hubbard and John H. Kinzie, both of whom were later prominent business men of Chicago.

On June 6, 1822, while the assembled traders were crowding into one of the rooms of the company post a young French Canadian, variously known as Alexis Bidigan, Alexis St. Martin, Samata and San Maten, was wounded by the

*Abstract of illustrated lecture to the faculty and student body of the College of Medicine, Dec. 17, 1930. The original paper contains much more detailed information.

accidental discharge of a shot gun at a distance of three feet. Dr. Beaumont was called and according to his accounts "the entire charge entered in a posterior direction, obliquely forward and outward, carrying away. . . the integuments . . ., blowing off and fracturing the 6th rib from about the middle anteriorly, fracturing the 5th, rupturing the lower portion of the left lobe of the lungs, lacerating the stomach by a spicula of the rib that was blown through its coat, lodging the charge, wadding, fire, in among the fractured ribs and lacerated muscles and integuments and burning the clothing and flesh to a crisp. I found a portion of the lungs as large as a turkey egg protruding through the external wound, lacerated and burnt, and below this another protrusion resembling a portion of the stomach what at first I could not believe possible to be that organ in the situation with the subject surviving but on closer examination I found it to be actually the stomach with a puncture in the protruding portion large enough to receive my fore finger, and through which a portion of his food that he had taken for breakfast had come out and lodged among his apparel. In this dilemma I considered any attempt to save his life entirely useless."

Hubbard, who was an eye witness of the accident and assisted Beaumont a few minutes later, has stated that "the experiment of introducing food into the stomach through the orifice, purposely kept open and healed with this object, was conceived by the doctor very soon after the first examination." This statement has been made the basis of attacks on Beaumont's ethical standards by those who would detract from the importance of his later work. However, Beaumont's own carefully recorded account indicates that during the following year he made every effort and employed every means known to him to heal the wound, even scarifying the edges of the wound and drawing them together with "adhesive straps." These efforts are recorded with meticulous care over nearly a year. Finally he gave up, "convinced that the stomach of itself will not close a puncture in its coats by granulation." The patient refused to permit an attempt at suturing the wound.

It was not until nearly two years after the accident that there appears in Beaumont's notes any indication of a realization of the scientific

importance of the case. He writes now, "This case affords an excellent opportunity for experimenting upon the gastric fluids and process of digestion."

Thereafter appear brief accounts of crude preliminary efforts. One of the earliest is a description of a raw beef dressing which he says "in less than five hours was completely digested off as smooth and even as if it had been cut with a knife." Later, he writes, "I can pour in water with a funnel, or put in food with a spoon and draw them out again with a siphon. I have suspended flesh, raw and wasted into the opening to ascertain the length of time required to digest them."

Beaumont sent a complete medical and surgical report of the case to Surgeon-General Lovell in 1824. The latter published it in the *Medical Recorder*, Vol. VIII, No. 1, p. 14, 1825.

On July 22, 1825, after having been transferred to Niagara, he secured a furlough for two months, taking Alexis with him to Plattsburgh, where he hoped to have better facilities for his experiments. But St. Martin deserted him to return to Canada. However, he published his completed experiments which included observations on digestion time of various substances in the stomach and comparisons with the time for similar substances in vials of gastric juice which were shaken frequently in crude imitation of peristalsis. He also recorded the internal temperature of the stomach.

After returning to Niagara, Beaumont was ordered to Ft. Howard, near Green Bay, Wis., and later to Ft. Crawford. After four years his continued efforts to secure Alexis' return were finally successful and on Dec. 6, 1829, he again resumed his status as experimental subject. Beaumont's laboratory equipment comprised a thermometer, a few vials and a sand bath.

A little over a year later Alexis was permitted to return to Canada. In August, 1832, Beaumont was granted a furlough for six months. Alexis joined him at Plattsburgh and a legal contract was executed whereby the latter was to submit, for one year to any sort of experiment, for which he was to receive board, lodging, traveling expenses, wearing apparel and \$150.

Beaumont abandoned his original intention of going to Europe and instead took Alexis to Washington where he continued his experiments

and reviewed the available literature on gastric physiology.

While here he succeeded in interesting Robley Dunglison, Professor of Physiology in the University of Virginia, from whom he obtained valuable assistance. His furlough having expired in March, 1833, he next went to Yale to consult with Benjamin Silliman, Professor of Chemistry, who made a chemical analysis of gastric juice and also forwarded a sample to Berzelius. He was now transferred to Plattsburgh, ostensibly as recruiting officer, but in reality that he might have the assistance of his cousin, Dr. Samuel Beaumont, in the preparation of the manuscript of his book which was published in the fall of 1833, eleven years after St. Martin's accident.

In 1834 and again in 1835, Edward Everett sponsored bills before Congress designed to reimburse Beaumont for his expenses and to finance further investigations but both these efforts failed.

In the fall of 1834 he received a letter transmitted to him by Silliman containing an account of Berzelius' experiments on the gastric juice sent to him more than a year before. The only exact information was that he had evaporated in vacuo 266.73 gm. of juice to a residuum of 3.385 gms., filled with crystal of sodium chloride, which he then covered with alcohol and put away to see what would happen. This must have been a great disappointment to Beaumont, as he had evidently entertained high hopes of important information from this source.

In 1834 Beaumont was transferred to St. Louis and Alexis was permitted to return to Canada. After the death of Dr. Lovell in 1836, Dr. Thomas Lawson succeeded to the office of Surgeon General. Beaumont was not happy under his administration and finally, in 1840, resigned to enter private practice in St. Louis. He had been offered the chair of Surgery in the Medical Department of St. Louis University but never actually gave any lectures there.

During the succeeding years he continued his efforts to secure the return of St. Martin in order that he might continue his experiments but all efforts failed. His practice became quite lucrative and his place in the community well established.

In March, 1853, he suffered a fall which so impaired his health that he passed away on April

25. His wife survived until 1870. One of his daughters lived in St. Louis until recent years and his son, educated in law, took over the care of property acquired in Green Bay during the doctor's assignment to Ft. Howard. Two of the latter's daughters, the only living descendants, still reside in Green Bay.

St. Martin survived until 1880, living near Montreal. Sir William Osler attempted to secure an autopsy, but the ignorance and superstition of the family frustrated this effort.

In the preface of his book Beaumont stated, "I submit a body of facts which cannot be invalidated. My opinions may be doubted, denied, or approved, according as they conflict or agree with the opinions of each individual who may read them, but their worth will be best determined by the foundation on which they rest—the incontrovertible facts. I had no particular hypothesis to support and I have, therefore, honestly recorded the result of each experiment exactly as it occurred."

While overenthusiastic admirers have assigned to Beaumont the identification of hydrochloric acid, a little consideration will make clear that he had neither the chemical training nor the equipment for such a piece of work. Moreover, Prout had published in 1825, about the time Beaumont first began his experiments, a suggestion of the nature of the acid. This suggestion, while correct, was not proven until the work of Bidder and Schmidt in 1852.

The most important phases of Beaumont's work are well known to the student of physiology. The simplicity does not detract from scientific importance, for almost none of the information contained in his book was known or even suspected before his time, and practically no conclusion of his has been disproven.

TETANY FOLLOWING AN ACUTE APPENDECTOMY WITH A CASE REPORT

J. D. KIRSHBAUM, M. D.

CHICAGO

This case is being reported because of its rarity as a complication following an appendectomy. That tetany may occur following an operation for a suppurative appendix is a condition which we have failed to see reported in the literature.

It only illustrates an old dictum that "anything may occur in the practice of medicine."

Patient, a law student (J. R.), aged 22 years, entered the Woodlawn Hospital complaining of pain in the abdomen, nausea and vomiting, for 8 hours. He stated that he had always enjoyed good health until 8 hours prior to his entrance. He developed a pain in his abdomen which was about the umbilicus. Pain was cramp-like in nature and was soon followed by nausea and vomiting. He had vomited five times during the first five hours. About seven hours after the onset the pain became localized in the right lower quadrant over McBurney's area.

Physical examination revealed a male very well nourished, lying quietly in bed, cheeks were flushed and he appeared subacutely ill. Temperature was 99.2, pulse 112 and respiration 24.

Eyes reacted promptly to light and accommodation; thyroid not palpable; throat not injected—tonsils had been removed; tongue was coated; lungs and heart essentially negative; abdomen was very tender over McBurney's with slight rigidity over the right rectus. No masses felt; no organs palpable; extremities negative; rectal examination revealed slight tenderness in the right side. Prostate was not enlarged; no blood on examining finger.

Urine examination was negative; white blood count was 20,750. Diagnosis made was acute appendicitis.

At operation a suppurative appendix was found. It was covered in its distal half by a heavy layer of fibrinous exudate with purulent contents and a fecolith at its tip.

Pathological diagnosis was acute suppurative gangrenous appendicitis.

First four days his post-operative course was uneventful. He was taking fluids freely and his temperature was about 99. About the fourth night, November 6, 1930, the patient was unable to sleep. He was very restless and complained suddenly to the nurse of a difficulty in breathing and cramps in his hands and feet. The patient described the attack by stating that he had a spasm in his fingers; that they were held clenched; he was unable to speak and his breathing was very rapid and labored, and after about five minutes he felt fine.

November 9, 7th day post-operative: White blood count was 17,550 and his blood chlorides

were 290 mg. per 100 c.c. of blood. Patient was running slight temperature of 99.4. He vomited about 3 times, dark bile staining material, for the first time since his operation. Because of a possibility of tetany, Cal. Lactate—one teaspoon—was given every 3 hours.

November 10, 8th day post-operative at 2 p. m. While in the process of giving 10 c.c. of calcium gluconate, intravenously, he suddenly became very dyspneic. His breathing became very stertorous and sighing. With each inspiration he would make a loud crowing sound. He had a typical carpal pedal spasm, holding his fingers flexed in his palm. Thumb was rotated inward and was abducted; forearm was flexed, held between a pronation and supination attitude. Erb's sign (galvanic hyper-excitability) was not tried. Tapping of the fascial nerve (Chvostek) was negative. Constriction of the arm, to test the excitability of peripheral nerves (Trousseau) produced no spasm of the hand. The attack lasted about 10 minutes. He later described it as being typical to the first attack 4 days previously.

Immediately following the attack his blood chlorides was 320 mg.; his calcium was 10 mg.; white blood count was 16,800. He again vomited several times.

November 16, 1930, he was discharged and has been feeling fine since then. The only outstanding features during the course of his convalescence is that the patient continually complained of abdominal pains, and was repeatedly given enemas for relief until his second attack of tetany, after which his distress subsided. The vomiting which occurred was present only the day preceding his second attack of tetany and during the day following the attack. He ran a slight temperature 99 to 100 for the first twelve days following his operation. His leukocytosis remained elevated. The patient gave evidence of being somewhat nervous and apprehensive of his condition. He would sleep poorly. His anxiety necessitated many unnecessary visits to the bedside.

Discussion. That alkalosis may have been an exciting factor, by the evidence of a low chlorides of 290 mg. is not very likely. Vomiting did not precede the first attack and only occurred the day before and the day after the second attack. It is known that excessive vomiting such as occurs

in pyloric obstruction may result in alkalosis due to a loss of chlorides from the stomach and may finally cause tetany. In our case the vomiting was not excessive. The second attack of tetany was precipitated by the apprehensive state of the patient while receiving calcium gluconate intravenously.

Conclusion: A case of acute gangrenous appendicitis four days after operation develops tetany with a second attack on the eighth day and made an uneventful recovery thereafter.

*From the service of Dr. R. K. Packard.

EXPERIENCE WITH CHRONIC DEAFNESS*

W. V. MULLIN, M.D.

Cleveland Clinic

CLEVELAND, OHIO

The experience referred to in this title extends over a period of twenty years, during each year of which there has been but little change in treatment or in its results. Real progress, however, has been made in the diagnosis of deafness which has resulted from the standardization and improvement in quality of the tuning forks, and of adoption of the audiometer into practical use. The hard of hearing have received much benefit from various hearing aids and increased proficiency in the examination of the labyrinth has led to a better knowledge of its physiology. Because of the intimate relationship of the labyrinth with the brain, a term has been coined, the fitness of which I often question, namely, *neuro-otologist*. There is no question that the otologist knows more about the *ear* than does the neurologist, while the neurologist is better qualified to diagnose and deal with conditions within the *brain*. But these are two distinct fields and a hyphen does not necessarily bring these two fields closer together. Whether by his examinations alone the otologist is capable of localizing a brain lesion in my opinion is very questionable, and for this reason I think the value of the otologist to the neurological surgeon cannot be compared with that of the ophthalmologist.

My contact with deafened individuals has often made me regret whatever reputation I have had as an aurist. It is hard indeed to have a

patient come, sometimes from a considerable distance, happy because he is seeing one more specialist and filled with the hope and desire for benefit, and then to have him leave in tears because it has been necessary to tell him that he has advanced nerve deafness or perhaps otosclerosis and that no local treatment will help him. In such cases the most careful painstaking advice as to the value of lip reading and of hearing aids is usually given a poor reception. One patient who later made a decided success of lip reading told me that she made six trips to the lip reading school, each time passing it by before she could compel herself to enter. Since such patients are as a rule seen only once, the entire consultation is rather unsatisfactory, and makes one inquire with Emerson: "Has science thrown any new light on our understanding of chronic progressive deafness?" (*Ann. Otol. Rhinol. and Laryngol.*, 40:9, 1931.)

By many people hearing aids and lip reading alike are looked upon as a kind of disgrace, or as a beneficial measure for the other fellow but not applicable to one's self. The education of the hard of hearing is indeed far from its goal.

For this report I have analyzed 325 cases of chronic deafness seen during 1930. These were all of the nonsuppurative type and may be classified as follows:

Chronic catarrhal otitis media.....	82
Nerve deafness	150
Mixed deafness	83
Otosclerosis	10

A careful history was taken in all cases, this being followed by tuning fork tests, tests with conversational and whispered voice, and with the audiometer, which was considered the most satisfactory means of determining the upper tone limits. Finally there was an investigation of the patency of the eustachian tubes and when the history revealed that it was indicated a general physical examination was made.

The term, mixed deafness, was used to designate a group of cases in which the response to these tests did not fall clearly into any one of the other three classes. I believe they are typical of the class referred to by Emerson when he says: "The end result, in all cases of chronic progressive deafness is nerve deafness." In some of these cases of mixed deafness there was eustachian tube obstruction and prolonged bone conduction with a decided failure to hear high tones. In other cases there was short bone con-

*Read before Section on Eye, Ear, Nose & Throat, Illinois State Medical Society, May 6, E. St. Louis.

duction with normal hearing of high tones. Certain kinds of acute inflammation within the middle ear will produce symptoms of perception deafness.

Most of the patients with chronic catarrhal otitis media came primarily to the ear department seeking relief from their symptoms referable to the ear; while the majority of the cases of nerve deafness came primarily to some other department because of some general physical condition, the ear condition being discovered during routine examination of the ears, nose and throat. Cases in this group—chronic catarrhal otitis media—are worthy of much consideration.

In our enthusiasm over seeking out and removing foci of infection, and for a meticulous examination of the labyrinth, I believe the eustachian tube has been neglected. I recommend to every otolaryngologist the reading of a recent and very excellent article by A. R. Tweedie, in the *Journal of Laryngology and Otology* for March, 1931, entitled "The Eustachian Tube." Tweedie refers to the original description of Eustachius, in which he regarded the pharyngeal end of the tube and its mucous membrane as a wonderful provision of nature which serves as a janitor by protecting the various parts of the middle ear cleft beyond it.

Tweedie says that "an efficient rhinologist should certainly rob the aural surgeon of much of his work." I heartily agree with this and am an ardent advocate of treatment of the eustachian tube via the nose. In carrying this out, the Holmes nasopharyngoscope has proved to be an invaluable instrument. With it I examine the mouth of the tube in every case. In the acute cases, if they are seen before an effusion has formed in the middle ear, the condition of the nasal mucosa is ascertained and an attempt is made to clear mucus from the mouth of the tube and reduce edema and swelling by the direct application of ephedrine in oil. If there is no bulging of the drum and Weber localizes to the affected side, a bougie is inserted and an attempt is made to restore aeration of the middle ear cavity. In a considerable number of cases the necessity for myringotomy is greatly lessened.

The direct influence of septal spurs and deviations upon chronic involvement of the eustachian tube is probably negligible, but since I never use

the Politzer method for inflation, whenever any obstruction impedes free passage of the eustachian catheter I do not hesitate to advise operation.

In cases of chronic catarrhal otitis media, no matter how often the eustachian catheter is inserted, it is always done under direct guidance with the pharyngoscope in the opposite nostril, as by this method there is no uncertainty about the location of the tube, or whether or not mucus is over the mouth of the tube. It should be borne in mind that there are conditions in the presence of which it would be poor treatment to inflate the tube even though the symptoms indicated it. Often aspiration should be the treatment instead of inflation. The presence of hypertrophy of the posterior ends of the turbinates and their relation to the mouth of the tube and of adhesions around the lateral walls of the nasopharynx can be determined.

If the air does not pass through the tube readily, a bougie is inserted. I prefer a small olive-tipped whale bone bougie, and rely entirely upon the sense of touch rather than upon any graduations on the bougie as to the distance it is inserted within the tube. I do not attempt to use large bougies. Any manipulation that might injure the epithelium is avoided.

I have long since given up the application of silver nitrate to the interior of the tube as I believe it has a deleterious effect on the ciliated epithelium of the mucous lining. Instead, I use a solution of resublimed iodine in liquid paraffin, this being inserted into the catheter with a medicine dropper and forced into the tube with gentle air pressure.

I emphasize this treatment because I believe in it and see good results from its use, although there is opposition to it. Thus Tweedie states: "As to any additional effect by bougies and the introduction or attempted introduction of medicated oils and vapors, I must confess that I am a heretic, although I know that skilled aurists of repute still use the same."

One condition that is not often mentioned is spasm of the eustachian tube. This is often encountered in nervous, high-strung women and when present prevents the entrance of air on inflation and sometimes resists the entrance of the bougie. In some of my cases the tube has

closed upon a bougie after it was inserted and it has been difficult to release it.

Every patient with chronic deafness, irrespective of its type, is entitled to open functioning tubes if this can be accomplished. In every case of vertigo of undetermined cause the tubes should be made patent. I have some cases in which closed tubes are the sole cause of this annoying symptom.

All patients with chronic deafness who are not getting worse are improving, and every patient who still retains serviceable hearing but has closed tubes should have them treated. We are invariably asked, "Doctor, why do my ears close?" Would that we could give the correct answer. Certainly the cause of closed tubes is not entirely local. A chronic nasal discharge is too prevalent for it to be considered a cause. Atrophic rhinitis with its wide open nostrils, profuse crusting and dry glazed pharynx is not intimately connected with tubal and middle ear disease. Infection cannot be the sole basis for this condition as is evidenced by the return to normal function following severe purulent infections in the middle ear and mastoid. It would appear that we must conclude that closed tubes are a constitutional condition, since these patients are affected by such physical factors as heat, cold, barometric and temperature changes, nervous exhaustion and fatigue, intestinal disorder, the kinetic neuromuscular system bearing the brunt of such an overload. With all of these conditions must we concern ourselves in the examination and treatment of such cases.

An analysis of the 150 cases of 8th-nerve-deafness gives rather depressing findings. Only the very deaf and the congenitally deaf came directly to the otological department. In early cases the deafness had been disregarded entirely, the condition being discovered in the routine general examination. In every case some other condition such as a chronic focal infection seemed to be present, and yet after the foci had been removed, improvement was not noted in any case. It would seem that once the 8th nerve is involved it is irreparably damaged.

It is interesting to note that there was a noticeable relationship between the presence of malignancy in some part of the body and nerve deafness.

In this group of cases of nerve deafness there

were 85 males and 65 females. The average age was 46 years or more. The right ear was involved in 16 cases, the left ear in 18, while in 116 the deafness was bilateral. A positive Wassermann was found in only 4 per cent. of the cases, a spinal Wassermann test being made in any case in which the symptoms indicated it. Certainly it would appear that the toxin of lues was but a minor factor in the production of nerve deafness. In several cases in which there was vertigo and nystagmus the presence of multiple sclerosis was suspected.

Eighty-three may be too large a number of cases to be included in the mixed deafness group as there may have been errors in the diagnosis. Perhaps some of these cases should have been added to the "8th-nerve-deafness" group. In some otosclerosis may have been present. But in any case, the outlook of the cases included in this group was as hopeless as in either of the other two groups.

The ten cases of otosclerosis were rather true to form. Nine of these cases were in women. The average age in the ten cases was 32½ years. In the majority of cases a familial history of deafness was elicited. Six of the women were married and the deafness became worse after pregnancy. Several of these patients declared they had been helped by treatment. Are we justified in trying to convince them that this apparent improvement is but a delusion? Each case was carefully studied to determine whether or not there was any endocrine dysfunction but none was found.

What, then, does this analysis show? Of 325 cases of chronic deafness seen in one year, in only 25 per cent. could any kind of relief be offered by treatment, and of this 25 per cent. improvement in some cases would be doubtful. Of the other 75 per cent. in which advice as to lip reading and hearing aids was given or an institution for the congenitally deaf children recommended, the advice was not well received, and in the majority of instances was not followed.

The hard of hearing are deserving of especial consideration and need treatment of some kind—especially psychological. The otologist has to compete with the charlatans throughout the country who are popular because they offer these

unfortunates false hopes even though at a high price.

Apology should be made for the pessimistic tone of this paper, but it expresses my feeling. I hope it may excite more interest in this problem. An earnest campaign must be carried on for the purpose of educating the public in regard to deafness, while as otologists, we ourselves should create and maintain greater interest in the eustachian tube.

DISCUSSION

Dr. G. C. Otrich, Belleville: There was one point that was not brought out. Dr. Dundas Grant used to say before you start to open a tube or pass a bougie, have the patient close the nares and swallow. It was his theory that when you found it would close by that method, which is the natural method of ventilation for the inner ear, leave it alone. If the patient feels no reaction by closing the nose and swallowing, you can go ahead and dilate the tube.

I hope Dr. Mullin will say something about the stiffness of the bougie and the danger involved in its use.

Dr. W. A. McNichols, Dixon: Do you feel in these progressive deafness cases that it is true that we do not get any improvement after the focus has been removed, but that we do stop their progressing?

Dr. W. V. Mullin, Cleveland, Ohio (closing): In answer to the first speaker, I said that complete fork tests should be made in all cases, and the results would determine your next step. How do you determine when a tube is closed? The final test in my practice is inflation. You will often find a tube closed by spasm, which will give the patient symptoms. You will not get a Weber localized on that side. You will often find resistance to air and resistance to a bougie. You cannot do any harm in inflating a tube with the pharyngoscope. You will not blow mucus into the tube, you can see the conditions in the tube, and the patient will not object to the procedure. We do not rely on the fork tests or any other until we have put the catheter in and inflated.

In reply to Dr. McNichols, I do not know whether it stops the process or not. The eighth nerve is certainly a most peculiarly sensitive nerve; it is affected by many things. Whether focal infection affects it or not I do not know. We see acute labyrinth complications. All cases of vertigo get better, but we do not know why. It is impossible to say whether removal of foci of infection stops it or not. However, I do think that foci of infection can cause irreparable damage.

Some one asked why I used an olive tip bougie. I am used to the olive tip, and I have them made special. The cylindrical bougie I should think would have sharp edges. The olive tip bougie is smoother, and I believe it does less harm in the way of wounding the epithelium. Perhaps the cylindrical is just as safe, but one gets accustomed to one instrument and becomes prejudiced just as I am about the nasao pharyngoscope.

A CASE OF TRANSIENT HEMIPLEGIA* (INTERMITTENT ANOXEMIC HEMIPLEGIA)

SAMUEL SOLOMON, JR., M. D.

BENJ. BOSHES, M. D.

Internes, Cook County Hospital

CHICAGO

Transient hemiplegias are reported from time to time, and there have been various theories advanced as to the etiological factor. That of cerebral vessel spasm, causing a localized cerebral anemia, has been supported by men like Langwill, Edgeworth, Heard, Osler, Allan, Russell and Parker. Riegel, Jolly, Francois Frank and Brown Sequard maintain that the caliber of the cerebral vessels is influenced by the sympathetic nervous system and that spasm of the cerebral vessels is caused by stimulation of these sympathetic nerves. More recently H. W. Fleming and H. C. Naffziger pointed out that changes in arterial and venous blood pressure are the chief factors in the production of these transient hemiplegias. They contend that such attacks occur most frequently in the sclerotic and in the aged, post mortem examination of whose vessels reveal hard thickened vessels, usually reduced in caliber. Such vessels, they contend, cannot go into spasm. On the other hand, transient hemiplegias in patients with elastic vessels are very infrequent. It is found that most cases of transient hemiplegia occur when the patients are at rest, especially during sleep. Some occur at meal time, and it is believed that splanchnic dilatation causes a drop in venous pressure and this causes a decrease in intracranial pressure. The blood passes rapidly from the arteries into the veins because this drop in venous pressure diminishes the resistance which forces the blood into the most peripheral arterioles such as are found in the brain.

Recently a case came under our observation which might be explained on the basis of a drop of blood pressure and pulse as a cause of cerebral anemia, which gave rise to attacks of transient hemiplegia.

C. S. A white male, aged 67, entered the Cook County Hospital on July 16, 1930, complaining of an attack of sudden paralysis of the right side of his body and of difficulty in speech. This lasted for about 10 minutes, after which he recovered the complete use of

*From the Medical Service of Dr. Aaron Arkin, Cook County Hospital, Chicago.

his limbs and speech. Several hours later, he had a similar attack with a complete recession of symptoms. Then in rapid succession at about half hour intervals, each lasting from 5 to 10 minutes, he had six attacks of hemiplegia like the original. These attacks were usually preceded by prickly sensations over the entire body, especially about the head. After each attack he dribbled some urine. His present medical history was essentially negative. His past medical history consisted of typhoid in his childhood and erysipelas four years ago. On examination, the patient was found to be a well developed white man. His pupils were equal, reacted well to light and accommodation. The heart was of the aortic configuration type with a soft systolic at the aortic area. The lungs were devoid of abnormal findings. The liver was not enlarged, and the spleen was not palpable. No edema of the legs was present, and no paralyses were found. The reflexes were bilaterally equal and normal. The pulse was 60, and the blood pressure was 168 systolic, 80 diastolic. During the examination, the patient's speech suddenly became thick, and he developed a complete right hemiplegia. The right angle of the mouth dropped, the tongue deviated to the right, there was a paresis of the right arm and leg, abdominal reflexes were absent, and the Babinski reflex was present only on the right side. The patellar reflex was somewhat increased on the right side. The pulse rate during the attack of hemiplegia was reduced to 48, and the blood pressure dropped to 138 over 74. While the patient was being observed the pulse rate was noticed to increase. Concomitantly, the thickened speech began to clear and finally became articulate. The blood pressure taken now revealed a rise to 168 over 84, and the pulse rate returned to 60.

Blood and spinal Wessermann's were negative, but the spinal fluid was found to be under increased pressure. The cell count was 10, and the Pandy was negative. The red blood count was 4,500,000, the white blood count 11,800, with a normal differential count. The urine was negative for albumin and sugar. Fundus examination revealed moderate vessel compression with normal discs—moderate hypertension fundi. Electrocardiographic findings revealed a slurring of the Q. R. S. wave with notching.

The treatment consisted of keeping the patient flat in bed, and giving him coronary dilators, such as nitroglycerine and metaphylline. Under this regime, the patient improved gradually, with only an occasional remission, so that at the end of 3 days the attacks ceased. There remained only an occasional paresis of the right arm, which gradually cleared up. For the next two months, the pulse varied from 70 to 84, and the systolic blood pressure ranged in the neighborhood of 150 to 155. The diastolic pressure apparently never varied much. The patient has been under our observation for the past 6 months, and there has been no clinical evidence of recurrence of symptoms.

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POSSIBLE ERRORS IN THE INTERPRETATION OF INTRAVENOUS UROGRAPHY†

DAVIS H. PARDOLL, M. D., AND
R. A. LIFVENDAHL, M. D.

CHICAGO

In order to attain a greater degree of accuracy in the interpretation of intravenous urograms, further observation and evaluation are essential. That our knowledge of intravenous urography will be enhanced by the more extensive employment of uroselectan* is quite obvious. While this method has been definitely established as an indispensable adjuvant to urology, cystoscopy and retrograde pyelo-ureterography should not be relegated to obscurity, nor should we permit any product or method to influence us until the relative value of each is ascertained. We feel that intravenous urography has facilitated urologic diagnosis, particularly in children and in nervous individuals upon whom cystoscopic examination and ureteral catheterization were found either impossible or impracticable.

It has been our experience that uroselectan completely failed to demonstrate either function or anatomical configuration in what subsequently was found to be a perfectly normal kidney. This failure cannot be explained by impaired or retarded function, or by temporary inhibition, but will remain an enigma until a better comprehension of the chemical and physiologic activity of renal parenchyma is manifest.

What happens to the product when it is injected, is the question we must ask ourselves.

*Furnished through the courtesy of the Schering Corporation of New York. †From the Urologic Department of the Post-graduate Hospital, Chicago.

Why does one kidney, which on gross and microscopic examination appears normal, occasionally fail to excrete the substance, while another, possibly having a greater affinity for the product, renders a satisfactory urogram?

The interpretation of an organ which on x-ray fails to cast a shadow following intravenous injection is that it is pathologically altered, reflexly or temporarily inhibited, that there is some obstruction present, or that the organ itself is absent. In fact, in some instances the roentgenologic shadow is intensified by obstruction. But what of the various cases which are pathologic, according to this interpretation and which, upon operation or autopsy, are found to be perfectly normal! Such is the case we are reporting.

We can readily comprehend why a urogram may be delayed for hours or days or even never obtained, because of impaired function or retarded excretion with poor concentration. It is also conceivable that where permanent or transitory obstruction is present, visualization may not occur; but why a normal kidney should fail to excrete the substance requires further study and interpretation.

This case has definitely demonstrated that the absence of visualization does not necessarily imply pathologic alteration, reflex inhibition, or absence of the organ.

The object in writing this article was neither to detract from the importance of intravenous urography nor to attempt to limit its vast field of application, but rather to disclose the possibility of an erroneous interpretation. No doubt, many unsuspected lesions of the urinary tract will be revealed by the utilization of this method. Occasionally, in cases in which the diagnosis is obvious, cystoscopy and ureteral catheterization may be eliminated. And yet, the physician or surgeon whose conclusions are based upon the roentgenologic findings alone, is exposing himself to severe criticism and possible error unless he verifies his diagnosis by means of a complete urologic examination.

We are inclined to be more cautious than ever in our interpretation of the roentgenograms furnished by this method, particularly in cases in which satisfactory visualization is not obtained, or in which there exists the least cause to doubt the accuracy of the findings. In these cases we advocate complete urologic study and,

if possible, x-ray confirmation by retrograde pyelography.

CASE REPORT

J. S., male, aged 53 years, was admitted to the urologic service Feb. 3, 1931, with the chief complaint of hematuria, frequency, urgency, nocturia, dysuria, and burning, which were intermittent in character and present since 1926. He had lost fifty-two pounds within the last twelve years. Other systems were essentially negative. The past medical and surgical histories were irrelevant.

Physical Examination: Only positive findings were recorded.

Temperature, 98° F.

Pulse, 72.

Respiration, 18.

Height, 5 feet 8 inches.

Weight, 175 pounds.

Blood pressure, 150/100.

Appearance: Rather anxious and evidence of loss of weight.

Rectal Examination: Prostate gland and seminal vesicles were normal on palpation; external genitalia was normal; no other relevant findings were noted.

Urine Examination:

Specific gravity, 1020.

Reaction, alkaline.

Color, red.

Physical appearance, turbid.

Albumen, ++++.

Sugar (Dextrose), negative.

Casts, negative.

Microscopic, many red blood cells and many pus cells.

Miscellaneous, occasional epithelial cell and bacteria.

Blood Examination:

Red blood count, 4,830,000.

White blood count, 11,150.

Hemoglobin, 85%.

Differential smear, normal relations.

Wassermann and Kahn, negative.

Urea nitrogen, 12 mg. per 100 c.c. of blood.

Urea, 25.68 mg. per 100 c.c. of blood.

Creatinin, 2 mg. per 100 c.c. of blood.

Cystoscopic Report: A No. 24-B.B. cystoscope was passed with relative ease, and several large blood clots were evacuated. There was profuse bleeding. The bladder was lavaged until the returns were fairly clear. The vertex of the bladder was normal. The left lateral wall showed a large tumor mass, almost covering the entire wall, with several ulcerated areas which were bleeding. The right wall was negative. The ureteric orifices were not visualized. There were two other areas of ulceration just in front of the internal orifice over the bed of the prostate gland.

Diagnosis: Papillary carcinoma of bladder.

Urogram (See Fig. 1) (right side): The kidney is of normal size, shape, and position. The pelvis and ureter were visualized, no evidence of pathology being found. *(Left side):* The kidney appears to be large, but of normal shape and position. No evidence of uroselectan was noted coming through. The pelvis

and ureter were not visualized in any of the x-ray films.

Bladder: The bladder is well distended, with evi-



FIG. 1. UROGRAM

Right Side: Kidney and ureter normal in size, shape and position. Function normal.

Left side: Kidney shadow is enlarged, but shape and position are normal. Pelvis and ureter not visualized. Function absent.

Bladder: Large filling defect due to papillary carcinoma.

dence of a large filling defect, the fluid being displaced by a large mass.

Resumé (Right side): A normally functioning kidney and ureter are noted. *(Left side):* Enlargement of the kidney shadow, with absence of function.

Bladder: A large filling defect, due to what appears to be a large carcinomatous mass, is noted.

Operation: Under nupercain spinal anesthesia, the bladder was opened and a large papillary carcinoma of the left lateral wall was exposed. The tumor mass was removed by electric cauter and the base coagulated. A rubber catheter was inserted and the bladder closed over it in the usual manner. Drains were inserted and the wound sutured. Two ounces of 95 per cent. alcohol were instilled into the bladder.

Post-operative course: The patient gradually lost ground. Temperature, 101-102 degrees; gradual distention and some emesis were evident.

Fourth day post-operative: Temperature rose to 104°, climbed to 105°, and the patient expired on the fifth post-operative day.

Cause of death: Pelvic cellulitis and peritonitis.

Pathologic findings: The pathologic findings are

limited to the report of the essential anatomical changes. The 12 cm. median infra-umbilical incision is held together in its upper one-half by interrupted linen sutures. The edges of the lower half are covered by a thick, foul smelling, grayish-green liquid, which also extends into the subcutaneous tissues above the external rectus fascia for a distance of 5 cm. on each side of the gaping wound. This leads into the urinary bladder, the fundus of which is held to the anterior abdominal wall by interrupted sutures, and which is partially filled by clots of old blood. The wall is everywhere thickened and the mucosa is discolored grayish-green to purple. The site of operative coagulation is 1 to 2 mm. below the surrounding mucosa, and covers an irregular area, the outline of which measures 3 by 4 cm. on the left postero-lateral and lower portion of the bladder. Microscopic examination of this region shows extensive, acute inflammatory changes of the residual muscle fibres and the internal and external surfaces of the bladder wall. The left ureteral orifice admits a 2 mm. probe and, microscopically, reveals marked swelling of the muscle fibres and destruction of the adjacent mucosa of the urinary bladder.

The pelvic connective tissue is the site of a large amount of thin, foul smelling, dark red liquid, which extends to and elevates the peritoneum as high as the fourth lumbar vertebra on the left, and up to the promontory of the sacrum on the right. This peritoneum is discolored a deep reddish-purple. The same liquid extends down the left inguinal canal, surround-

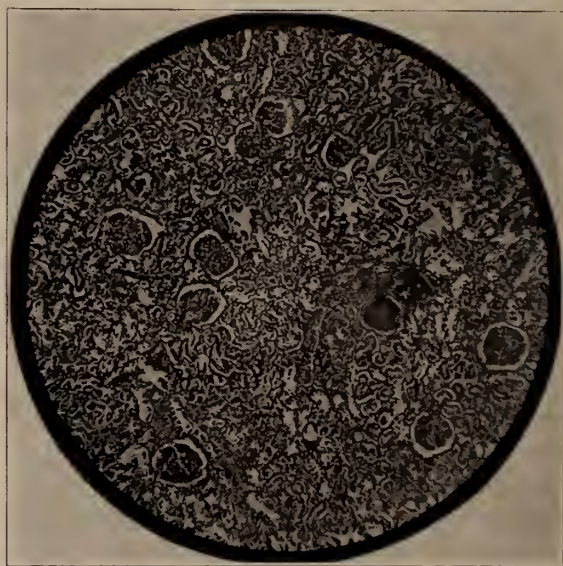


FIG. 2. MICROSCOPIC SECTION OF LEFT KIDNEY

Structure is perfectly normal. (For further description refer to text of article.)

ing edematous spermatic cord structures and the testicle, with resultant edematous thickening of the cutaneous tissues of the scrotum. The left inguinal and lumbar peri-aortic lymph glands are enlarged up to almond

size, moderately firm, and show inflammatory hyperplasia on microscopic examination.

Left Kidney: The left kidney weighs 163 grams, measures 12x6x4 cm., and is covered by a non-adherent thin capsule. The surface is smooth and pale grayish-red. The cortex is 6 mm. thick, well defined and everts slightly. The shape, renal pelvis, and blood supply present no abnormality. Microscopically (Fig. 2) the glomeruli are of normal size and their capillaries are thin and contain a moderate number of erythrocytes. The delicate connective tissue is not increased, and the afferent and efferent vessels are not thickened or obstructed. The epithelium of the glomerular capsule is flat. The convoluted tubules are lined by slightly enlarged epithelial cells, with a moderately granular cytoplasm, however, not attaining the size of hyaline or colloid droplets. The remaining portions of the tubules show similar but less marked changes of their epithelium. The interstitial tissue contains only an occasional, very small accumulation of lymphocytes. The arterioles and arteries are not thickened and their lumens are not occluded.

Right Kidney: The right kidney weighs 165 grams, measures 14x5x4 cm., and answers the same description except that there is a 1.5 cm. cyst in the cortex of the upper pole, which is filled with thin, colorless fluid.

Ureters: The ureters are grossly normal, except the lower 2 cm. of the left, which is dilated to 28 mm. in circumference.

Bladder Tumor: The operative specimen consists of two firm pieces of tissue, each measuring 5.5x4.5x3.5 cm., with an irregular polypoid surface of a deep reddish-purple color and composed of pale yellow, slightly friable tumor tissue. Microscopically, it is composed of numerous masses of papillae, with a vascular connective tissue core that is surrounded by a stratified layer of transitional epithelium. The pedicle shows extensive invasion of the connective tissue by irregularly shaped processes composed of varying sized epithelial cells containing many hyperchromatic nuclei and mitotic figures. The surface of the tumor is the site of recent and old hemorrhage and subacute and acute inflammatory changes.

55 E. Washington St.
4707 Broadway.

INJURIES TO THE KIDNEY*

HARRY C. ROLNICK, M.D.

CHICAGO

A review of thirty cases of injuries to the kidney, taken from the records of the Cook County Hospital and covering a period of the last five years, has led to some interesting observations. Most of these were treated by the

urologic division; a number were under the author's care.

There is an extensive literature on traumatic kidney and the subject is fairly well covered in some text-books. The purpose of this report is to emphasize some of the important symptoms, also the occasional pre-existing renal pathology and the value of conservative non-operative treatment.

Injuries to the kidney may vary from a very mild transient hematuria to complete destruction of the kidney with injury to the blood vessels and associated rupture of other viscera causing a rapidly fatal termination.

It is not rare in industrial practice to observe, in association with other injuries, a slight transient hematuria which may last a few hours, sometimes even twenty-four hours without disturbing the patient and then clear up with no evidence of permanent kidney damage. None of these is included in this series.

The very severe forms with rapidly fatal termination died within a few hours after admission. The patients were in shock, injuries to other viscera were quite marked and the presence and extent of renal injury were noted only post-mortem. The records of twelve of these were examined but were not included in this report.

The cases here reported are of injuries limited to the kidney. In nearly all instances these were associated with injury to the loin or abdomen. Fracture of the lower ribs were frequently present, and in a few fracture of the pelvis also.

In one of the series, the mechanism of injury was indirect. While walking down stairs, the patient stepped heavily on one heel and then felt a "jarring" on the left side. This was followed by a hematuria and left lumbar pain which persisted for ten days and then cleared up. Similar cases have been reported. Injuries to the kidney may be the result of pyelography, over-distention of the kidney pelvis resulting in what has been termed pyelo-venous backflow, or actual rupture of the calices. Deaths have been reported.

The extent of the external injury does not determine the severity of kidney damage. One patient fell off a porch on the third floor; another fell about thirty feet; both had severe hematuria which lasted three days and then subsided completely without any further symptoms.

*Read before the Section on Surgery at the Annual Meeting of the Illinois State Medical Society, East St. Louis, Wednesday, May 6, 1931.

Another patient tripped and fell on the ground; he had an intermittent hematuria which lasted three weeks, developed a large hematoma in the loin which later became infected, requiring drainage of a huge perinephritic abscess and resulted in considerable destruction of the kidney.

Twenty-seven of the thirty cases were subcutaneous injuries,—no break in the skin but with various degrees of bruising and hematoma. Two were due to external wounds. Of these latter, one was a stab wound. At operation a well formed clot had already formed in the wound. This was not disturbed and the patient made an uneventful recovery. The other was a gun shot wound of the kidney with uneventful recovery without operative interference.

One of the cases was a spontaneous rupture of the kidney. This was an unusually interesting case. The patient presented a marked bulging in the loin and intermittent chills and fever indicating a perinephritic abscess. At operation a urinary extravasation was found due to a spontaneous rupture of an old calculus pyonephrosis. Although a diseased kidney is less likely to rupture following an injury because of the thickening and fibrosis of its capsule, there may be areas only slightly fibrosed with only a slight laceration of a kidney present so that even spontaneous rupture may occur as in this case.

It is often well to know the previous history of the patient. In two of the subcutaneous injuries there were definite evidence and history of a previously existing pyonephrosis. A very slight trauma may produce rupture of a pathologic kidney; this should be of interest to industrial surgeons.

One patient was a hemophiliac; hematuria was extensive, continued for many days and required repeated blood transfusions. His injury had not been severe.

As stated previously, twenty-seven of the thirty cases were subcutaneous injuries,—without a break in the skin. These comprise the vast majority of kidney injuries. They are usually classified as to severity and extent of injury into ecchymoses, subcapsular rupture and transcapsular rupture.

Ecchymoses indicate only slight, and as a rule, superficial trauma. The subcapsular hematoma, if present, is very slight and the hematuria transient. These are the mild type of injuries not included in this report.

Subcapsular injury to the kidney comprises the majority of cases. In this type of injury the outer capsule remains intact, although the damage to the kidney may be extensive. The tears are often multiple and portions of the kidney may be pulpified. In one of the cases to be mentioned later the kidney was found at operation to be completely divided with the outer capsule still intact.

Injuries to the kidney are far more common in the male. In this series there were twenty-one males and nine females; thirteen of the thirty were between the ages of ten to twenty; five were between twenty and thirty, six between thirty and forty, four between forty and fifty, one was seven, one was fifty-two and one was seventy-three. It is thus seen that the most active: children, young adults, and males comprise the majority of cases. Women are also less susceptible because of the wider pelvic bones and greater amount of subcutaneous fat.

Although the right is usually given as the more commonly affected side, in this series there were fifteen each of right and left sided involvement. The presence of the liver on the right side, limiting the mobility of the kidney, is considered a factor in the usually reported greater frequency of right sided injury. In none of this series was the injury bilateral. If of any degree of severity, bilateral involvement would most likely be fatal. In this series traumatic kidney was noted as occurring in one of three thousand admissions.

The mechanism of injury as reported in experimental and clinical studies is that of indirect force transmitted to the kidney somewhat similar to that of contre-coup in fractures of the skull. The fixation of the diaphragm at the time of injury, the pressure and fracture of the ribs and pressure against the spine are factors in the production of the fracture of the kidney. It has been shown experimentally that it is practically impossible to rupture the kidney post-mortem. The kidney is distended with blood at the time of injury and the mechanism is thought by some to be that of increased hydraulic pressure causing a sudden bursting of the kidney. The injury is really more than a tear, Fracture of the kidney is the term commonly employed and is more appropriate.

Tears of the kidney are nearly always irregularly transverse or oblique, rarely longitudinal,

the sudden increased tension tearing the kidney at its weakest point.

The following is a typical example of the clinical history of many of the cases.

The patient tripped and landed on the ground on the right side, fainted, had to be assisted up. Within one hour nausea and vomiting occurred, then pain and tenderness on the right side. Two hours later the urine was bloody; hematuria, grossly red, has persisted. Within twenty-four hours after injury, marked rigidity, tenderness and discoloration over the right side with a continuation of the bloody urine.

Automobile accidents comprised seven of this series. One boy had been hit in the side by a baseball bat. A woman developed a hematuria and right sided pain following a blow in the loin by her husband's fist. In eight instances the patient slipped or lost balance and fell heavily to the ground, in a few cases striking hard on sharp objects.

Hematuria is the prominent symptom and immediately directs attention to the urinary tract. It was present in all cases except the one of spontaneous rupture of a calculus pyonephrosis. The duration of the hematuria varied considerably. In two cases it ceased within twenty-four hours. In four others it persisted intermittently over a period of three to five weeks. The usual duration was five to six days. The urine was always grossly bloody at first, the hematuria clearing up gradually with occasional clots present. In one case the hematuria did not appear until five weeks after the injury. In this case the patient had slipped and injured his right side. He suffered some pain which cleared up in a few days, then went about doing his usual work as a salesman. Four days before admittance, he noticed for the first time that his urine was slightly bloody; the hematuria subsided for forty-eight hours to appear again and more marked. He came to the hospital considerably exsanguinated. Twenty-four hours later the hematuria had subsided with rest in bed. On the third day of his stay in the hospital, hematuria suddenly reappeared in a much more severe form. His bladder became distended with blood clots which could be evacuated only through repeated irrigations through a metal catheter. These clots were long and wormy, typical of ureteral clots. Shortly thereafter the patient was operated upon, having received a

blood transfusion and other measures to combat shock. At operation the kidney was found to be completely divided by a transverse tear extending down to the pedicle. The outer capsule was intact. The most likely explanation of this injury is that that patient had a slight tear at the time of injury five weeks previously and that this had produced only small superficial hemorrhage. However, the continued activity of the next five weeks together with jarring of automobile riding had completed the tear and only then did hematuria begin. This patient died six hours after nephrectomy.

In the transcapsular form of injury, in which the outer capsule also is torn, a hematuria gradually develops in the loin which may become marked and present itself as a bulging mass in the loin. In some the hematoma, instead of remaining localized, may gravitate downward along the posterior peritoneum or ureteral sheath and appear in the pelvis or scrotum. Usually, however, the hematoma remains limited immediately about the kidney and does not produce a bulging in the loin. Although there were none in this series, some of the cases of transcapsular rupture may present little or no hematuria.

Gastro-intestinal symptoms were often marked in the cases where the injury had been severe. The symptoms are best described under the term of "renal ileus." They frequently simulate an intraperitoneal involvement. Vomiting, abdominal distention and localized and sometimes diffuse rigidity, occasional dilatation of the stomach and inability to pass flatus are the usual findings. The patient, however, does not appear seriously ill; pulse is very little elevated, auscultation of abdomen shows intestinal peristalsis present. These symptoms clear up in a few days. An example of this is the following:

Patient tripped and fell on the right side. Hematuria followed six hours later with pain in the back becoming worse. Admitted to the hospital sixteen hours after injury. Findings: Marked tenderness and rigidity of abdomen extending from subcostal margin on right side to umbilicus; vomiting shortly after admission which was repeated and still present the next morning when the abdominal tenderness and rigidity were more marked, dilatation of stomach definitely noted and abdomen markedly distended. Patient, however, did not appear sick; peristaltic sounds could be heard and fluoroscopy showed a mass on right side pushing all the viscera to the left. This patient made a rather uneventful convalescence for the symp-

toms subsided rapidly in three to four days; his stay in the hospital was fourteen days.

Renal ileus is in many cases merely reflex ileus and often follows operations on the kidney. It is frequently present in renal colic due to stone when some slight abdominal distention may occur and also obstipation for a few days following the colic. Renal ileus with all apparent evidence of peritonitis is frequently present in the acutely infected kidney as in pyonephrosis due to stone. It is in this case due to peritoneal irritation from the retroperitoneal infection. The retroperitoneal hematoma following injury to the kidney produces symptoms simulating an intraperitoneal involvement.

In extensive injury, there is an extravasation of urine also, due to large tears in the calices and pelvis. In the less severe forms there is no urinary extravasation, the injured torn portion of the kidney ceasing to secrete urine. Considerable oliguria,—diminished urinary secretion,—was noted as a rule the first two or three days after injury.

Perinephritic abscess developed in four cases. The extravasation of urine and blood which later became infected produced the abscess. In two of the four the rapid development of perinephritic abscess was followed, after incision and drainage, by a urinary fistula due to extensive injury to the kidney or pelvis. Both of these cleared up within three to four months.

In supcapsular injury, the bleeding usually subsides more rapidly due to the increased tension with the capsule. Neither urinary extravasation nor hematoma are marked but the pain is often severe because of the increased intracapsular tension.

The end results of injuries to the kidney consist of healing with scar formation in the damaged kidney together with a varying degree of perinephritis, distortion and infiltration about the kidney.

In mild injuries, there are slight scars in the cortex as an end result. In others the amount of scarring and infiltrations may be so marked as to present definite obliteration of the calices, giving a picture simulating a tumor of the kidney.

Hydronephrosis may develop as shown in another pyelogram. Fibrosis about the pelvis and ureter causes obstruction and produces hydronephrosis. Chronic pyelonephritis may be the

end result of a low-grade infection of the kidney developed after the injury.

The amount of per-renal infiltration is, as a rule, very extensive and marked. Late operations are difficult because the infiltrations are as hard as "shoe leather." The peri-renal tissues are difficult to free and the peritoneum is frequently torn in the attempt. One of our cases was operated upon one year later for persistent pain, the marked perinephritis compressing the kidney. The peritoneum was so adherent to the perirenal tissues that freeing of the kidney was only partially accomplished. In another case operated upon six weeks after the injury, the capsule was already almost 2 cm. thick.

Five patients died; two died within eight hours after admission, associated concussion and fracture and shock were the primary or contributing factors. The patient who had a spontaneous rupture and calculus pyonephrosis died two months later of uremia. Another died two months after injury; he had, however, an associated injury to the spine. It is questionable whether these four cases should have been included in this series. The fifth was the one with a completely divided kidney who died six hours after nephrectomy.

Five patients were operated on; there were two other nephrectomies performed successfully. A stab wound of the kidney was exposed and closed without disturbing the kidney. Another was operated on one year after injury for chronic perinephritis.

Thus, of twenty-six cases which can be considered, for the first four of the five deaths mentioned can be excluded in the final estimate of the treatment given, three were operated on and twenty-three treated conservatively; one of the twenty-six died.

Despite the fact that marked hematoma may form, perinephritic abscess and urinary fistula occasionally develop and marked adhesions and infiltrations form later, conservative non-operative treatment is by far the treatment of choice for traumatic kidney. The vast majority of cases will clear up under conservative management. If bleeding is profuse or there is evidence of intraperitoneal involvement, operation is, of course, indicated.

Some of the patients who were treated con-

servatively were very sick, showed evidence of marked renal ileus but cleared up in a few days or a week. The patients are usually in greater or less degree of shock when they enter the hospital. Operative interference is a serious procedure under these conditions and is of no particular advantage. It should be resorted to only as a life-saving measure for severe hematuria. If a hematoma develops in the loin or there is pyelographic evidence one or two weeks later that the kidney is very badly damaged, one can then, after the patient has recovered from the immediate shock and general reaction to the injury, operate to clear up the hematoma and possibly remove the kidney. This is a matter for individual judgment in particular cases.

DISCUSSION

Dr. Royal Tharp, East St. Louis: The doctor mentioned in his paper frequently renal ileus. In my experience renal ileus always occurs when the kidneys are traumatized whether through injury or operation. In all of my exploratory nephrectomies or pyelotomies for traumatized kidneys I have had renal ileus following in twenty-four to forty-eight hours.

He mentioned cystoscopy in the diagnosis. Remembering Brewer's experiments that traumatized kidney is much easier infected than one that is not traumatized, cystoscopy and ureteral catheterization is usually not indicated. There are times when it is. Brewer traumatized kidneys in dogs and injected colon bacilli and they all died immediately. One of the dangers to the kidney is infection.

Since many injuries are slight and are recovered from without operation, the question arises in each case whether operation is indicated. In some cases the injuries are so extensive and the shock so great that nothing can be of any avail. Experience is the only guide in such instances. In any case, if primary traumatic shock is present, it should be combatted by the well-known measures of rest, morphine, heat and fluid. Transfusion of blood may be necessary. The indications for operation are first, signs of peritoneal involvement, especially free fluid; second, rapidly increasing signs of hemorrhage, either primary or secondary (pallor, fall of blood-pressure, tachycardia, increasing size of tumefaction, or loss of much blood with the urine, and third, signs of infection (fever, leukocytosis, prostration). Late hydronephrosis and pyonephrosis demand operation, but these are not matters of urgency.

Treatment: If expectant treatment is decided on, every effort should be made to avoid infecting the bladder, and to keep the patient absolutely quiet. He must also be closely watched, as operation should not be delayed if infection supervenes, or the loss of blood

becomes dangerous. By waiting too long, a stage may be reached in which the patient's powers of resistance are so lowered that he has little chance of withstanding the operation.

Results: Keller reports that in 478 cases not operated upon, 107 (22 per cent.) died, 60 of hemorrhage, 38 of infection, and 9 of other causes. Suter in 427 cases not operated upon had 88 deaths (20.6 per cent.) Of 143 cases operated upon conservatively, 21 (14.6 per cent.) died. Of 131 cases operated upon by nephrectomy, 22 (16.7 per cent.) died. In the total of 701 cases, 131 (18.6 per cent.) died.

My personal experience has been limited to three cases, one following a mine accident in which a physician in Belleville did an exploratory. He found the kidney in three pieces and attempted to suture. He stopped the hemorrhage and the patient did fairly well for a while, then infection and sepsis developed. In that case I cystoscoped and made a pyelogram. A nephrectomy was done and the patient eventually recovered.

The other case was a severe injury in which nephrectomy was done on exploration. An hour or so after operation the patient died. I did not do the operation.

The third case was a gunshot wound with a twenty-two rifle. The patient died about two hours after the injury. We were fortunate in getting a postmortem. The bullet had entered the right kidney, gone through the body and through the left kidney. The surprising thing to me was how a twenty-two bullet could partially pulpify both kidneys as it did in this boy.

Dr. George deTarnowsky, Chicago: I think Dr. Rolnick is to be congratulated on bringing this conservative paper before you. Unless the hemorrhage is so severe as to immediately endanger life, I believe the patient will recover under conservative treatment. The only thing to be estimated on the part of the surgeon is whether it is possible to wait until the infection has declared itself; in other words, until a lumbar abscess is manifest, or to go in a little earlier and by simple lumbar drainage avoid this abscess. It is a matter for individual judgment and individual experience on the part of the surgeon. There is no question but that there is no immediate necessity for operation. The patient should be treated for shock primarily and then watched and pyelogrammed if necessary. If hematuria persists longer than three days, we should find out how much of the kidney has been destroyed. If the kidney has been so pulpified that it will never function again, I do not think we are wise to wait until we have a large lumbar abscess before going in.

The mortality statistics quoted by Dr. Tharp I am afraid take in a number of cases where there are associated lesions. In so many of these accidents the injury is apt to be intraperitoneal and the kidney injury merely incidental. The two combined will increase our mortality tremendously. Ordinary intracapsular lesions of the kidney will subside automatically if nature is given a chance for physiological rest.

FACTORS CONCERNED IN RADIATION THERAPY OF MALIGNANT DISEASE*

L. R. SANTE, M. D.

Professor Radiology, St. Louis University
ST. LOUIS, MO.

Time and again the radiologist is confronted with the question: "Of what value is radiation therapy in the control of malignant disease?" He might well answer this question with the query of his own: "Of what value is surgery in the control of malignancy?" Obviously neither of these questions can be answered by a simple statement. We all know that radium and x-rays are universally recognized as most effective agents in the control of malignancy, but we are all aware likewise that they do not prove successful agents in the cure of all cases; if they were universally successful there would be no need for further search for effective means for combating this disease.

Let us inquire therefore into the factors concerned in the successful irradiation of malignant disease. In the first place the location and size of the growth are often vital factors in its successful destruction. If it involves a vital organ, the destruction of which in itself would prove fatal, such as the liver, the pancreas, lung or brain, then its successful treatment is obviously impossible. While size alone is not absolute contra-indication to irradiation, it limits the effectiveness of this method, renders greater possibility for metastases and leaves a larger defect for ultimate repair. Tumors involving non-vital organs which are readily accessible, such as carcinoma of the mouth and tongue, skin, cervix-uteri, etc., are more effectively dealt with.

Secondly, the degree of radiosusceptibility of the actual cells composing the tumor. The recent demonstration of the effect of radiation on cell growth in tissue culture by Strangeway and Canti can leave no doubt as to the direct action of radiation on cell structure or to its selective action on certain types of cells. The more closely the tumor cell approaches the embryonal type, the more susceptible it is to the destructive action of radiation. Conversely, the more highly differentiated the cell is, the less destructive effect is obtained from radiation. Embryonal tumors succumb readily to the effect

of radiation, whereas the very highly differentiated nerve tissue tumors are least of all affected.

If the radiosusceptibility of the tumor cells were the only factor concerned, the problem would be much simplified, but there are many other factors which tend to complicate the situation. A third, most important factor in cell nutrition. Tumors may be destroyed by the action of radiation on their blood vessels, interfering with their nutrition. If these are young newly formed vessels, such as occur in highly cellular, rapidly growing tumors, the reaction to irradiation may be very prompt and effectual, since the young endothelial cells succumb very readily to irradiation. Even tumors composed of more resistant cells may be influenced through interference with their blood supply by the gradual production of endarteritis from the effects of irradiation; the effect under these conditions is more gradual but may be none the less effective.

The environment of the tumor cells may also influence their susceptibility to irradiation, probably largely through an effect on their nutrition. For instance, squamous cell carcinoma located on the lip where it depends entirely upon its blood supply for nutrition, may be very readily destroyed by irradiation, whereas, cells derived from the same growth which metastasize to the cervical lymph nodes, where the cells lie in the lymph spaces and derive their nutrition from the lymph, may be peculiarly resistant. Carcinoma of the tongue, likewise, depends for its nutrition upon its immediate blood supply and in many instances even squamous cell carcinoma in this location responds readily to irradiation. In this instance, also, cells derived from the same growth, when metastatic in the regional lymph glands, may be much more difficult to destroy. To influence metastatic malignancy in lymph glands we must rely upon the direct effect of the radiation upon the cell structure; if the tumor cells are relatively more susceptible than the normal tissue cells, they can be destroyed by irradiation; if they are more resistant, they cannot be destroyed without producing death of the normal tissues in which they are lodged.

Three more or less distinct types of reaction of tumor tissue to radiation are recognized:

1. Autolytic.
2. Necrotic.

*Read before Section on Radiology of Illinois State Medical Society, May 6, 1931, East St. Louis.

3. Growth-restraining.

The autolytic type of reaction takes place in embryonal tumors or other highly cellular, rapidly growing, vascular tumors, which are nourished by young, newly formed blood vessels. These tumors melt away and disappear in an incredibly short time after irradiation, without necrosis or toxic constitutional reaction. This may be considered as the ideal irradiation reaction. It has been our experience that such tumors will stand large quantities of radiation, doses even approaching those necessary to produce necrosis in resistant tumors, without themselves undergoing ulceration. We have been able six weeks after irradiation of patients suffering with carcinoma of the cervix, with identical amounts of radiation, to differentiate merely from the subjective symptoms of the patient, those in whom complete regression has occurred with autolytic reaction, and those in whom regression has been incomplete with necrosis. The former have a sense of well-being and are free from pain; the latter exhibit clearly their distress and show evidence of marked toxic reaction.

The second, or necrotic type of reaction, results when highly differentiated resistant tumors are treated with radiation in sufficient doses to cause their destruction. Such tumors may be even more resistant to irradiation than the surrounding normal tissues. Doses sufficient to cause death of the tumor cells, cause necrosis and ulceration. In this type of tumor there is no fine gradation of susceptibility; if the cells are killed, ulceration occurs. No dose is sufficient to produce death of the tumor without necrosis. Unless irradiation is carried well beyond the zone of apparent involvement, viable cancer cells may be found in the very margin of the ulceration. This type of reaction is obviously only applicable to treatment of small growths. There are, of course, many tumors with sensitivity between these two extremes which require varying degrees of irradiation for destruction of their cells.

Lastly, there is the type which we term "growth restraining reaction." This type of reaction is characterized by the production of large amounts of fibrous tissue about the individual cells of the entire tumor. This dense fibrous tissue capsule chokes off the tumor and restrains its growth. It occurs in resistant tumors which

have developed deep-seated focal necroses from repeated subjection to sublethal doses of radiation over a long period of time, or as a result of intense interstitial irradiation. This is the type of reaction which we must often strive for in resistant tumors which are so large or extensive as to make complete destruction by caustic irradiation impossible.

The multitude of factors concerned in the determination of the degree of radiosensitivity of any growth, therefore, renders its ultimate reaction to radiation uncertain even in the face of complete clinical and microscopic analysis. Microscopic examination is often of great advantage in estimating the radiosensitivity of tumors, but even where this is not available we still have access to our previous observations on the radiosensitivity of growths which predominate in any given location. Experience has taught us that we are justly entitled to place reliance on our observations in this regard. For example, epitheliomas occurring on the upper portion of the face are in the large majority of instances composed of basal cells, whereas those occurring on the lower portion of the face are usually made up of squamous cells.

Similarly, our past experience has demonstrated that carcinoma of the uterine cervix is in many instances very radiosensitive, regardless of the type of cells which the pathologist may report from histological examination.

On the other hand, carcinoma of the breast is most frequently of adenomatous type, which is very refractory to radiation therapy. In this way the tumors of each region of the body can be analyzed in the light of past experience and the problem of their treatment by irradiation can at least be approached with a greater degree of accuracy.

Unfortunately the complex character of malignant growths renders it impossible to determine definitely the ultimate outcome in any given case following irradiation. A good dictum to follow is: Never consider any malignant growth, no matter how small it may be or how slight the involvement may seem, to be insignificant and conversely, never consider any malignant growth, no matter how large or extensive it may seem, to be hopeless until it has been given the "test of irradiation." By "test of irradiation" is meant the application of a single inten-

sive course within the tolerance dose of irradiation, to the tumor and observing it for three or four weeks for signs of regression.

Missouri Building.

DISCUSSION

Dr. E. L. Jenkinson, Chicago: I enjoyed Dr. Sante's paper very much. I think as Dr. Sante has said that a great many of these lesions may look very innocent and yet cause a good deal of trouble. Whereas a number of lesions may be extensive at the start and appear as though nothing can be done for them, if they are treated oftentimes the best results are obtained in these types of patients.

I cannot altogether agree with Dr. Sante regarding reactions. I can see, of course, why you do not get the general reactions in a great many of these small lesions. I cannot make myself think it is due to necrosis. In large lesions we see and treat, we get reaction long before we get necrosis. I cannot make myself believe that necrosis takes place as rapidly. I think it is due probably to a breaking down process, and absorption, "possibly foreign protein."

It is true that in a great many of the patients we treat, the results of the treatment are not direct, that is, not direct on the tumor itself. It is our opinion that the results depend upon the types of cells that are in the tumor. A great many of these patients, for instance, have an open fulminating type of carcinoma of the breast. You may treat this patient, giving a bad prognosis, and find the area responds. You will find other areas in the same tumor which do not respond, and vice versa. That is probably due to different types of cells. I do not think all of these different tumors have the same types of cells. Even with the microscope; you cannot give a prognosis of how well that tumor is going to respond.

In deep carcinoma, far down in the structure of the body, I think a great deal depends upon cutting off the blood supply. I think you probably restrain these growths. The growth may remain idle for years. In fact, I have seen a case of carcinoma of the breast operated on twenty-three years ago. She had irradiation by a competent doctor, and twenty-three years later found a recurrence in that same breast and involvement of the supraclavicular glands and humerus.

In malignancies of the face, tongue and so forth, I am glad to see Dr. Sante get such wonderful results. In my experience, the treatment of these malignancies of the tongue has been anything but encouraging. I remember a year ago a surgeon operated on the mother of one of our staff members for carcinoma of the tongue. We sent her to Dr. Quick, who gave her extensive radiation, but it was not a year before she was dead. At the time of operation she had nothing that could be found in the neck. One of our very good dermatologists in Chicago looked at it for two or three weeks and pronounced it benign on several occasions, and advised against surgery or irradiation. Sections made shortly thereafter showed the lesion to be malignant.

I think Dr. Sante's demonstration from a construc-

tive standpoint was very excellent, and I wish to express my appreciation.

Dr. I. S. Trostler, Chicago: I want to compliment Dr. Sante on his paper, because he said treat enough—give radiation enough. The trouble is that much of the radiation is insufficient for these large growths. You can hit a little tack with a tack hammer, but there is no sense of using a tack hammer when you have a big nail to drive.

Dr. L. R. Sante, St. Louis: Sometimes we give an impression by showing cases in this matter that all have a favorable outcome. For every patient I have been able to show you there are several which I cannot show you. The reason for success or failure is not to be found in superior technic but in causes inherent in the tumor itself.

Give infinite attention to every detail of the treatment and follow it judiciously throughout its entire course; giving every patient a maximum of radiation is the only secret of success. As far as treating enough is concerned, I believe we may well give this phase our most careful consideration. If you have a growth, even though it be large, that shows by previous radiation that there is an opportunity of destroying it, by reason of the fact that it is sensitive to radiation, then give it all the radiation you possibly can; but, on the other hand, if you see from your test of radiation that it is a resistant growth and you have not had any chance of destroying it, then I think it is well to be conservative; just give enough to hold down the growth and give the patient as much comfort in his remaining life as possible.

Marriages

ALFRED E. JONES to Miss Dillenberg, both of Chicago, June 6.

WILLIAM ALFRED MANN, JR., to Miss Maud Lucille Davison Yeager, both of Wilmette, Ill., May 30.

FRED E. SCHON to Miss Evelyn Dunn, both of Chicago, May 6.

GUY A. SLOAN, Bloomington, Ill., to Mrs. La Rye Augspurger of Pulaski, Iowa, May 18.

Personals

Dr. Henry W. Sandeen was named city health physician of Woodstock, May 15.

Dr. Floyd E. Fielding, city health director, Bloomington, resigned, May 29, to take up private practice in Peoria.

Dr. and Mrs. James J. Troutt, Nashville, observed the fifty-ninth anniversary of their wedding, May 14.

Dr. Harry T. Wilson was appointed health officer of Centralia, June 4, succeeding Dr. Gilford N. Welch.

Dr. Clarence W. Milligan was appointed as city superintendent of health in Springfield, May 5, succeeding Dr. Herman H. Tuttle.

Dr. John D. Foley was appointed health commissioner of Waukegan, June 1. He is the son of the late Dr. John C. Foley, who served in that capacity for many years.

Dr. William Engelbach, New York, addressed the Schuyler County Medical Society on "Diagnosis and Treatment of Endocrine Disorder," June 20, in Rushville.

Dr. Joseph E. Jensen, Momence, sailed, May 16, for Hawaii, where he was recently appointed medical director of Woihinu Hospital and Pahala Plantation Hospital. Dr. Jensen served two years' internship in Queen's Hospital, Honolulu. He will be succeeded in Momence by Dr. Joseph H. Gamet, Chicago.

Dr. B. Barker Beeson, Chicago, has been elected a member of the committee for the celebration of the one hundredth anniversary of the birth of Alfred Fournier, the renowned syphilographer. The event will occur at Paris, May 12, 1932.

Dr. Harold Swanberg of Quincy left in June to attend the Third International Congress of Radiology at Paris. Dr. Swanberg plans to be abroad about six months attending various European Clinics.

William Henry Browne, for thirty-one years secretary of the College of Medicine of the University of Illinois, was feted by his colleagues at the Palmer House, June 12, previous to his retirement from service. He has continued in office, as business manager of all the Chicago Departments under three presidents and six deans. The banquet was given by the Alumni and the Faculty of the College of Medicine.

At the eleventh annual meeting held in New York City June 9, 1931, Dr. C. W. Hopkins, Chief Surgeon of the Chicago & Northwestern Railroad, was elected chairman of the medical and surgical section of the American Railway Association. Dr. Hopkins' election to the high honor must have come as a great surprise to him for the reason that the doctor was not present at

the meeting, being confined to his home on account of ill health.

At the annual meeting of the Chicago Tuberculosis Society Dr. Jerome R. Head was elected president, Dr. Allan J. Hrubby vice-president, and Dr. Minas Joannides secretary and treasurer. Doctors W. H. Watterson, Samuel A. Levinson and Robert S. Berghoff were elected trustees.

News Notes

—The meeting of the Peoria City Medical Society, June 2, was addressed by Drs. John D. Koucky, Chicago, on "Differential Diagnosis of Abdominal Pain" and Linden Seed, Chicago, "Surgical Treatment of Exophthalmic Goiter."

—Stark County has had no diphtheria deaths in eight years, and Boone and Wabash counties have had no deaths from this cause in seven years, the state department of public health reports. Herrin holds the record for cities of 10,000 or more, having had no deaths in six years. LaSalle and Urbana have had no deaths from diphtheria in five years, and Bloomington in four. No other Illinois city of over 10,000 has been free from diphtheria deaths for more than one year. Last year fifty-six counties and nineteen cities reported no deaths from this disease.

—Convalescent serum for treating preparalytic cases of infantile paralysis is available free from the state department of public health. The serum has been taken from healthy individuals who have recovered from infantile paralysis. The serum, when given to patients before the onset of paralysis, is of value in preventing paralysis, experiments have shown. The department of public health reports about three times as many cases of the disease now as during the corresponding period of 1930. Forty-eight cases were reported in the first nineteen weeks of 1931, as against seventeen in 1930. The greatest number of cases usually occurs in the period between June and November. Physicians may obtain the serum by addressing the state director of public health, Springfield.

—At a recent meeting of the Champaign County Medical Society, a new plan was adopted to care for the county's indigent poor. The

Champaign County Academy of Medicine was organized, its membership consisting of those physicians who agreed to care for the sick poor according to the proposed plan. Following a meeting with the county board of supervisors, the Champaign County Academy of Medicine took over the work at the county hospital at much less than had been formerly paid. According to the plan, a group of four to six men do the work at the hospital for two months. A captain is appointed for each group, and medical, surgical and obstetric cases are rotated. At the end of the two months a meeting is held, interesting cases are presented, papers read and problems discussed. The hospital committee of the board of supervisors is invited to meet with the physicians. Any member of the Champaign County Medical Society in good standing may join the academy of medicine at any time by signifying his willingness to work. The money derived from this service goes to the academy as a whole. Although it has not been decided to what purpose the money may be expended, it is felt that it will be used for a medical library and librarian, or possibly to purchase articles needed at the county hospital to care for the patients.

—A plan has been in operation at St. Luke's Hospital since April 14, announced as a new method for meeting the decrease in revenue and an increase in the demands for free treatment. The St. Luke's Hospital Association was organized, membership being made available to every friend of the hospital wishing to help carry on the work among Chicago families unable to pay for medical care and hospitalization. Memberships in the association were divided into five classes in order that all persons might become affiliated and participate in a manner consistent with their means. Each of these classes, which range from that of a participating membership with annual dues of \$10 to a life membership of \$1,000, have full and equal rights with the others. Each member is entitled to an identification card insuring the bearer of an immediate report to relatives in case of accident or serious illness, the card specifying that St. Luke's Hospital be informed in any emergency. In addition to this card, each member receives a membership certificate and all bulletins, pamphlets and reports issued by the hospital. Up to May

28, funds equivalent to the annual return from an endowment of \$200,000 had been received in the form of membership dues. It is hoped to build up an association with thousands of members that will produce an annual fund comparable to the return from an endowment of several million dollars.

—An instalment plan has been placed in effect at Presbyterian Hospital for obstetric patients. They are charged a \$45 fee, including a laboratory fee of \$5 for Wassermann test and urinalysis and \$4 a day while the patient is in the hospital. For the normal stay of ten days, the \$45 covers the entire hospital bill; an additional \$4 is charged for each day over this period. This fee may be paid on the instalment plan, \$5 at registration, \$5 for each month the woman is pregnant and \$5 each month thereafter until the total amount is reached before admission. Additional charges are made when circumcision and roentgenograms are necessary. If the patient is not delivered at the Presbyterian Hospital, the money is refunded, \$5 being retained to cover the laboratory fee. These patients, who occupy beds in the general obstetric wards, are cared for by the resident physicians under the supervision of the head of the obstetric department. The social condition of each patient applying for the \$45 rate is carefully investigated and no one is admitted who has sufficient income to pay for a physician. Patients able to pay a physician's fee may use the instalment plan but are charged rates in proportion to the accommodations desired. According to a report, May 18, 150 women were on the maternity list under prenatal care.

—At the Commencement Exercises of the Colleges of Medicine and Dentistry and the School of Pharmacy of the University of Illinois, June 13, the Commencement Address was given by Dr. Edward H. Kraus, Ph.D., Sc.D., Dean, College of Pharmacy, University of Michigan, on "Some Pertinent Aspects of Higher Education."

At these Exercises the William Beaumont Prize of \$100 for the best research on Diseases of the Gastro-Intestinal Tract was awarded to Alexander J. Nedzel, M. D., for work on the "Passage of Bacteria Through the Splanchnic Body Surface."

The University of Illinois Chapter of Sigma Xi prize of \$25 for the best original piece of scientific investigation by a student during the year was awarded to Morris A. Kaplan, B. S. on "A Modified Method for the Preparation of Hematoporphyrin."

—At the annual meeting of the Medical Women's Club of Chicago, held June 10, Dr. Goldye L. Hoffman was installed as president and the following officers were elected for the ensuing year: President-elect, Dr. Edith B. Lowry; first vice-president, Vida Latham; second vice-president, Elizabeth M. Stanley; secretary, Dr. Elizabeth H. Schirmer; treasurer, Dr. M. Osborne Lichner, and editor, Dr. Sadie Bay Adair.

—The 462nd regular meeting of the Chicago Gynecological Society was held June 19, 1931.

PROGRAM

Presentation of Specimens:

Case Reports:

Papers:

1. "Separation of the Symphysis Pubis following Spontaneous Labor," by Ralph A. Reis, M. D., Joseph L. Baer, M. D., Ellen Stewart, M. D. (by invitation).

2. "Blood Chemistry Study in Normal Pregnancy and Eclamptogenic Toxemia," by Samuel Kaplan, M. D. (by invitation).

3. "Some Observations on the Aschheim-Zondek Test in the Diagnosis of Pregnancy," by M. Edward Davis, M. D.

4. Preliminary Report: "Modifications of the Hormone Test for Pregnancy," by R. A. Lifvandahl, M. D. (by invitation).

5. "A Comparison of the Sedimentation and the Ruge Virulence Test in 150 Gynecological Cases," by William A. Simunich, M. D.

—The following Clinical Program was presented by Loyola University School of Medicine Alumni Reunion, June 8 and 9, 1931.

June 8, 1931, Cook County Hospital
Genito-Urinary Surgery.....H. Rolnick
Gall Bladder Surgery.....G. Apfelbach
Gastric Surgery.....J. B. O'Donoghue
Gynecologic Surgery.....H. Schmitz
Surgical Amphitheatre
Medical Clinic.....I. Volini
Medical Amphitheatre

Ear, Nose and Throat.....S. Salinger
Ward 21

June 9, 1931, Lewis Memorial Maternity Hospital

Newborn Clinic.....E. McEnery
Pre-Natal Clinic.....William Hanrahan

June 9, 1931, John B. Murphy Hospital

Cesarean Section.....F. O. Bowe
Placenta Previa.....J. L. Cunningham
X-ray film demonstration.....H. E. Davis
Cystic Disease of Bone.....A. C. Garvy
Open operations in fractures; Pathologic and traumatic with presentation of patients and X-ray films. (Three cases).....H. R. Kenny
Pituitary Glioma. Presentation of patient with lantern slides of Sella Turcica.....

.....Maximillian Kern
Urologic Diagnosis.....J. P. O'Neil
Differential Diagnosis. Calcified Mesentery

Glands and Gall Stones.....M. J. Purcell
Ureteral Stricture.....A. C. Slinde

Tuesday, June 9, 1931, Clinics at the following affiliated hospitals:

Alexian Brothers Hospital....1200 Belden Ave.
Mercy Hospital.....2537 Prairie Ave.
Misericordia Hospital and Infants' Home....

.....2916 W. 47th St.
St. Anne's Hospital.....4900 Thomas St.
St. Bernard's Hospital....6337 Harvard Ave.
St. Elizabeth's Hospital...1423 Claremont Ave.
St. Mary of Nazareth Hospital.....

.....1120 N. Leavitt St.
Oak Park Hospital 525 Wisconsin Ave., Oak Pk.

—Clinics of the College of Medicine of the University of Illinois were given Alumni week as follows:

Room I

Research Hospital, June 11

Dr. C. A. Hedblom, Chairman

Dr. Willard Van Hazel—Phrenic Nerve Resection for Bronchiectasis and Tuberculosis.

Dr. Frederick Dyas—Thyroidectomy.

Dr. C. N. McKenna—Undescended Testicle.

Dr. H. M. Thomas—Demonstration of Bone and Joint Cases, Arthrodesis, Etc.

Room VI

Dr. E. W. Wischmann—Uterine Fibroid.

Dr. Amy Littig—Spinal Anesthesia.

Dr. A. Bamberger—Gastric Surgery.

Dr. G. W. Post, Class 1909—Gall Bladder.
 Dr. R. B. Malcolm—Rhizotomies (3).
 Dr. F. L. Stone, Class 1910—Treatment of Sterility.

Cook County Hospital, June 11

Dr. Carlo Scuderi, Chairman

Surgical Amphitheater—Surgical Program.
 Dr. Karl Meyer, Class 1908—Gastric Surgery.
 Dr. R. W. McNealy, Class 1910—Thyroid.
 Dr. Marshall Davison, Class 1920—Gall Bladder.

Dr. George DeTarnowsky—Carcinoma of the Colon.

Dr. George L. Davenport, Class 1907—Cerebral Tumour or General Surgery.

Dr. Frank Jirka—Tularemia.

Dr. Frederick Dyas—Thyroid.

Medical Amphitheater—Medical Program.

Dr. Henry E. Irish, Chairman

Dr. Julius Hess—Pediatric Clinic.

Dr. Maurice L. Blatt—Pediatric Clinic.

Dr. Henry E. Irish, Class 1901—Pediatric Clinic.

Dr. Harry A. Singer—Medical Aspects of Peptic Ulcer.

Dr. Ellis B. Freilich, Class 1914—Pleurisies.

Dr. Maurice Lewison—Physical Examination of the Chest.

Dr. A. F. Lash—Puerperal Sepsis.

University Hospital, June 12

Dr. Edward L. Heintz, Chairman

Dr. Bernard Fantus, Class 1899—The most Important Diatetic Prescription.

Dr. Edward L. Heintz, Class 1901.

Dr. Charles Davison—Goitre.

Research Hospital, June 12

Dr. D. J. Davis, Chairman

Research Library.

Dr. C. George Appelle, Class 1916—Ureteral Calculus.

Dr. M. J. Seifert, Class 1901—Physiologic Gastro-Enterostomy.

Dr. I. Edward Bishkow, Class 1911—Errors in Diagnosis of Hyperthyroid Diseases.

Dr. L. F. Weber, Class 1921—External Skin Irritants.

Dr. Dwight Orcutt, Class 1901—Eye Problems of Interest to General Practitioner.

Dr. T. G. Knappenberger, Class 1906—Choice of ether as an anesthetizing Agent and the

Technique of Other Administration by Drop Method.

Dr. O. E. Nadeau—Spinal Anesthesia.

Dr. Adolph Hartung, Class 1908—Roentgen Diagnosis of Bronchiectasis.

Dr. Allan J. Hruby—Pneumothorax Treatment of Tuberculosis.

Dr. Max Biesenthal, Class 1904—Medical Aspects of Chest Surgery.

Dr. Charles S. Williamson—Medical Clinic—Cases Illustrating Diagnostic Problems.

Deaths

JOHN ALLEN ANDERSON, Chicago; Rush Medical College, Chicago, 1898; aged 64; died, May 18, of arteriosclerosis.

CHARLES STUART BOWMAN, Alsey, Ill.; Barnes Medical College, St. Louis, 1909; served during the World War; aged 45; died, May 10, of pneumonia.

WILLIAM ÉDSON BOYNTON, Chicago; Chicago Homeopathic Medical College, 1898; member of the Illinois State Medical Society and the American College of Surgeons; formerly professor of ophthalmology, Hahnemann Medical College and Hospital; on the staffs of the Burnside Hospital and the Illinois Masonic Hospital; aged 58; died, May 25, of chronic nephritis.

HARRY C. CAMPBELL, Alton, Ill.; Keokuk (Iowa) Medical College, 1895; a Fellow, A. M. A.; on the staff of St. Joseph's Hospital; aged 61; died, April 27.

PETER JOSEPH GILLEN, Clinton, Ill.; Marion-Sims College of Medicine, St. Louis, 1898; member of the Illinois State Medical Society; aged 62; died suddenly, April 20, of heart disease.

SAUL CHARLES GREENWALD, Chicago; University of Illinois College of Medicine, Chicago, 1915; a Fellow, A. M. A.; aged 39; died, May 15, of cardiac decompensation and cerebral embolism.

ADOLPH E. HANSING, Belleville, Ill. (licensed, Illinois, 1894); member of the Illinois State Medical Society; aged 76; died, May 9, in St. Elizabeth's Hospital, of cerebral hemorrhage.

O. BAXTER HOWE, Woodstock, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1878; aged 78; died, April 15, of acute myocarditis.

HARRY EUGENE KINGSLOW, Evanston, Ill.; Meharry Medical College, Nashville, Tenn., 1915; aged 48; died, April 29, in Plainfield, N. J., of pulmonary tuberculosis.

FRANK DYCKMAN RICH, Joliet, Ill.; University of Michigan Homeopathic Medical School, Ann Arbor, 1893; member of the Illinois State Medical Society; aged 61; died, May 8, in the Silver Cross Hospital, of pernicious anemia.

JOHN L. YOLTON, Bloomington, Ill.; Missouri Medical College, St. Louis, 1885; aged 72; died, May 2, of coronary thrombosis.

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DELUSIONS OF GRANDEUR

Delusions of grandeur are twice as common among men as among women, according to a study of patients in Chicago Psychopathic Hospital.—DR. IRENE SHERMAN.

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Piatt	J. W. Blan, Monticello	J. M. Holmes, Monticello.
Pike	W. F. Reynolds, Barry	Frank N. Wells, Pittsfield.
Pope	No Society.	
Pulaski	John F. Hargan, Mound City	B. V. Rife, Mounds.
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Richland	H. D. Fahrenbacher, Olney	F. L. Barthelme, Olney.
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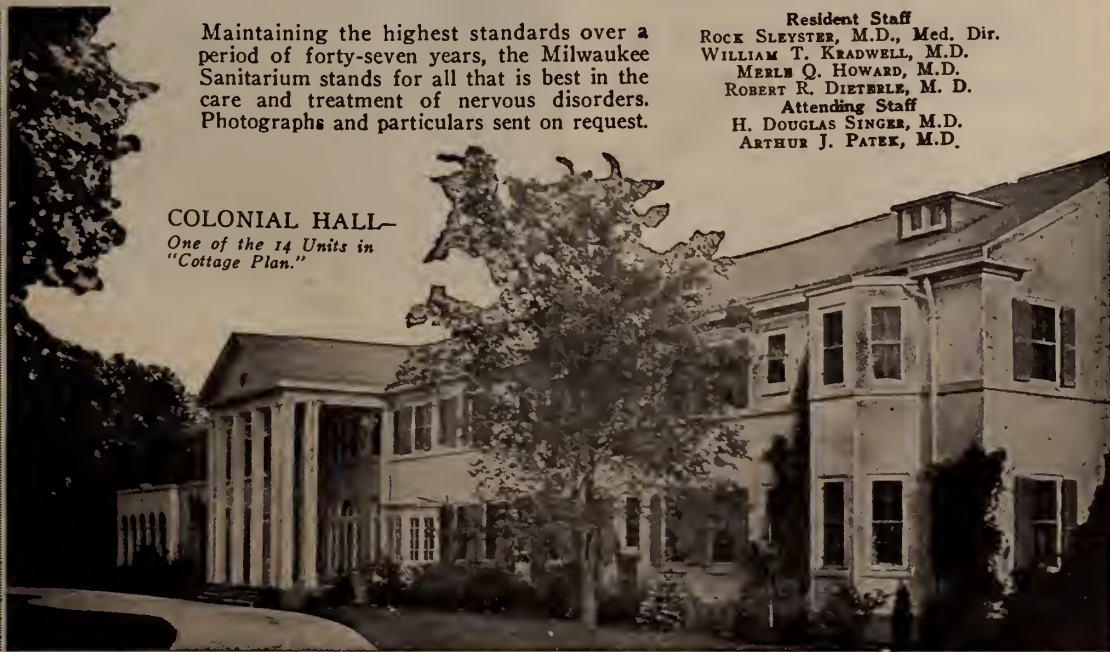
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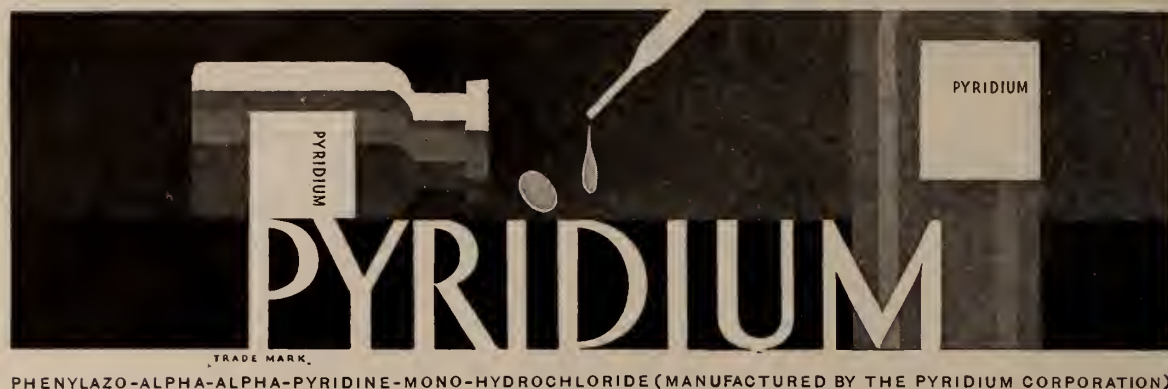
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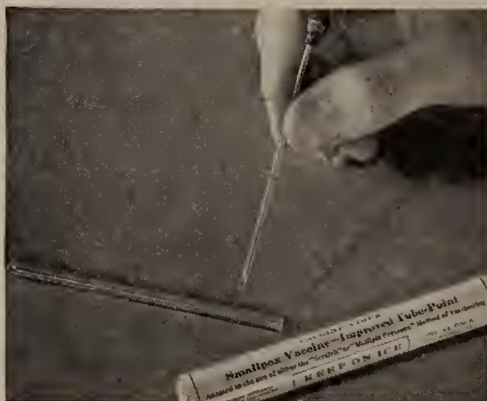
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Editorials

THE AMERICAN MEDICAL ASSOCIATION MEETING AT PHILADELPHIA

The eighty-second annual meeting of the American Medical Association, held in Philadelphia, June 8-12, was one of the largest and most successful in its history. Approximately seven thousand fellows were in attendance. The medical profession of Illinois was represented by 223 fellows, the largest of any state excepting the states bordering on Pennsylvania.

The secretary's report shows a membership in the American Medical Association slightly in excess of 100,000, the largest in the history of the association; of this number over 65,000 were on the fellowship roster. Illinois is credited with 7,371 members and 5,432 fellows for the year 1931.

Illinois was represented by its full quota of ten delegates.

The meeting of the association consisted of four features:

1. The House of Delegates.
2. The Scientific Sessions.
3. The Scientific Exhibits.
4. The Technical Exhibits.

The House of Delegates met in regular session each day and discussed problems of administration, among them the very important subjects of state medicine, medical treatment of veterans of the world war and prohibition.

The report of the Board of Trustees covered sixty-one pages in the Handbook. Among other things it called particular attention to the marked increase in the work of the Association which now requires the services of more than 500 full-time employees in the headquarters building in Chicago. The gross earnings of the Journal were \$1,773,220.18, while the Journal operating expenses were \$993,174.24, leaving net earnings from the Journal of \$780,045.73. The miscellaneous income was \$48,010.80 and Association income \$47,097.07, making a total gross income of \$875,153.80. All expenses amounted

to 465,428.16, leaving a net income for the year 1930 of \$409,725.64. Many additions and improvements have been made in the Association's physical equipment. A new rotary press with a capacity of 96 pages was purchased at a cost exceeding \$70,000 and is now in operation. The sum of \$750,000 has been set aside as the nucleus of a building fund to which will be added more from time to time in order to erect a building sufficiently large to care for all of the activities of Association. The net worth of the Association, Dec. 31, 1930, was \$2,802,369.63.

The House of Delegates appears to have literally taken the "bull by the horns" and it is believed that the medical profession is today more determined than ever that it shall take care of the business of their own profession and not let it be done by outside parties. The policy of the federal government of rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities was bitterly attacked by the House of Delegates and strong representations were made to the Congress and the American Legion to abandon the policy and substitute therefor a plan of disability insurance benefits.

A resolution of far-reaching importance and bearing upon the economic situation of the profession and the fundamental principle of government was introduced and adopted by the House of Delegates as follows:

RESOLUTION ON THE POLICY OF RENDERING MEDICAL AND HOSPITAL BENEFITS TO VETERANS WITH NON-SERVICE CONNECTED DISABILITIES

Dr. H. H. Shoulders, Tennessee, presented the following resolutions:

WHEREAS, The federal government has inaugurated the policy of rendering medical and hospital benefits to veterans of the World War with non-service connected disabilities; and

WHEREAS, This policy was inaugurated over the opposition of the American Medical Association; and

WHEREAS, The policy now in force, if carried to its logical conclusion, involves the construction, the staffing, and the maintenance of a sufficient number of hospitals to accommodate the hospital needs of all the veterans of the World War; and

WHEREAS, Such a policy places the federal government in unnecessary and unjust competition with the civilian hospitals and the medical profession of the United States; and

WHEREAS, The present policy is of unequal benefit to veterans by reason of the fact that many disabled vet-

erans cannot (for one reason or another) avail themselves of the benefit; therefore be it

Resolved, That the House of Delegates of the American Medical Association petition the Congress of the United States and the American Legion to abandon the policy of rendering hospital and medical benefits to veterans of the World War with non-service connected disability, and substitute therefor a plan of disability insurance benefits with the following provisions:

First, the creation of a Bureau of Disability insurance in the Veterans' Bureau as now constituted.

Second, the issuance of a disability insurance policy to each veteran with a disability benefit clause, as follows:

- (a) The payment of a weekly cash benefit during a period of total disability, and
- (b) The payment of liberal hospital benefit sufficient to cover the hospital expenses of a veteran during a period of hospitalization for any disability. Such benefits to be paid to a veteran on satisfactory proof of total disability, and
- (c) Such other provisions as are necessary for the proper administration of the act.

Be it further

Resolved, That the proper officers of this association be instructed to approach the officers of the American Legion with the view to securing the adoption of the policy above set out as a part of the legislative program of the American Legion, and be it further

Resolved, That each state medical association be requested to form a committee whose duty it will be to approach the state and local Legion posts throughout the country with a view to securing the adoption of this program by them.

A distinguished feature of this session was the elaborate use of the radio for coincident education of the public. For each day the Philadelphia County Medical Society arranged a series of public lectures, which were broadcast on the radio; also innumerable radio talks, and a full hour of radio education on the National Broadcasting chain. The scientific assembly of the association consisted of fifteen sections at which about three hundred papers were read and discussed.

The Scientific Exhibit was the subject of numerous encomiums. It included a half mile of aisles and so many exhibits that a visitor who cared to spend fifteen minutes in each might well have utilized the entire week in this display alone. Elsewhere is a report of the Committee on Awards. This department of the work is now recognized as one of the most valuable features of the annual session; it has been carried to a high point and represents a model for similar exhibits on a smaller scale throughout the world.

The clinical lecture program which takes

place on the first two days of the Annual Session was attended regularly by a changing audience of one thousand listeners. Here eminent clinicians discussed problems of recent interest in scientific medicine and concerned themselves particularly with the clinical application of such knowledge. Thus special emphasis was laid in the Philadelphia Session on the treatment of disorders affecting the blood, on fungus infection of the skin, on syphilis, on deficiency diseases, on arthritis, on infantile paralysis and on diabetes. These clinical lectures constituted a veritable postgraduate course in practical medicine. Their increasing popularity testifies to the fact that they meet a definite need. The American Medical Association in its Annual Session is endeavoring to provide Fellows of the Association with clinical education as good as or better than that available in any other group or in any other way.

The great Technical Exhibit was beautifully elaborated with memorial arches named for heroes of medicine. Exhibitors had plenty of light and space, and left Philadelphia more than satisfied. Indeed, one exhibitor reported that the assistants in his booth had interviewed 3,600 persons during the annual session. An average detail man sees from eight to ten physicians each day; hence the work in this exhibit represented 360 days of work for one detail man, or 70 of work for the five men who were in the booth.

President E. Starr Judd, in his president's address before the association, discussed emphatically some of the outstanding problems of the profession. A few excerpts from his talk are very timely, we quote:

The profession of medicine is under obligation to protect the public from unsound programs as much as to see that it is informed on the proper principles. A committee on public relations composed of members who have made studies of these problems, and who appreciate the obligations of the profession to the public, is a valuable part of a state organization.

The organization of all medical activities in each state, so that the public health association, state medical association, and all other associations and auxiliaries are under the one head helps greatly to coordinate all medical activities. This scheme brings the medical profession as a whole into the leadership of all activities pertaining to medicine within the state. It is not only the privilege of the profession to assume this leadership, but it is also its solemn obligation to direct all medical activities.

Society must be made to realize that organized medicine is perfectly able to control and operate its affairs without the help of the government or other outside organizations and that it can do so to the advantage of every one concerned.

INDIVIDUAL RELATIONSHIPS

The individual relationship of the physician and the patient is now and always will be the crux of medical practice. The fact that several plans for public relations have been worked out and put into operation shows that the profession is aware of the social and industrial changes that are taking place, and that it is making the necessary changes and fulfilling its obligations. With all of this development, however, unless the intimate personal relationship between physician and patient is maintained it will not be possible to obtain for the patient the kind of service that the majority of American citizens are entitled to and will demand. No plan yet suggested seems to fit all communities, for the problems vary in different places. One thing I am certain of, however, is that whether caring for the sick is done by private practice, group practice, clinics or guilds, it must be continued on a personal basis.

Routine procedures, with established compensation and reward, would not only destroy all enthusiasm for the development of the art of the practice of medicine but would also take away all stimulation and initiative for investigation and research.

MEDICAL EDUCATION

The American Medical Association was organized largely for the purpose of advancing premedical and medical education. At the time of its organization the requirements of medical training were insignificant and those who operated the medical schools derived financial returns according to the number of students in the school. In some instances, therefore, everything possible was done to make it easy for the students to enter and pass through the school. On the other hand, practitioners did not want any more competition than they were obliged to have, so they opposed the easy plan for admission to the schools and the easier way of completing the courses. Medical education became entirely different after the formation of the American Medical Association, and particularly after the Council on Medical Education and Hospitals was established. This body has brought both premedical and medical education to a standard by which they are recognized throughout the world. Like many other good ideas, when they once get a start it is difficult to control them, and the question now arises as to whether the requirements are not too rigid, and the time required for completion of a medical course is not too long. All are agreed that it is not possible to have too much training for this work, but some feel that the medical school courses are too long and too elaborate. One point is certain, and that is that most of those who spend many years in preparation for the practice of medicine will not be content to go into general practice and from there work up in the profession. They have been taught the practice of medicine with all the

most modern devices and equipment and are lost without them. Not all of these requirements are essential, and many students will become better physicians if they are obliged to carry out examination and practice according to their natural senses.

The trend of medical education is toward scientific medicine and specialization, and not so much time is given to the art of the practice. The achievements of scientific medicine within the last few years are not realized by many. Certain diseases have been brought under complete control, and some will probably be eradicated in a short time. Through the efforts of science, knowledge is being accumulated concerning the cause and the course of disease, and this makes better treatment possible. Better treatment will come as our knowledge of the fundamental is increased, so that no one with a sound conscience can belittle the time and effort that is put into the study of scientific medicine. Not all medical students are scientists, and few real scientists are good practitioners of medicine; so the best results are obtained by a close association between the two. A practitioner of the art of medicine should not do things in a purely routine manner but should be on the lookout for better methods. If he studies his cases individually and in groups, his research in this way may add valuable information to our knowledge. Not only that, but studies of this kind take away the drudgery of routine practice and add stimulation and pleasure to work. On the other hand, in order that the most may be derived from scientific studies, every one who devotes his time to this work should welcome the opportunity to pass this information on directly for the benefit of other patients. In order to do this, he must carry on a practice himself or must be closely associated with some one who does.

Too often research and experimental work are carried on exclusively in laboratories or in isolated places. The best type of research may often be done by thoughtful, studious physicians in their everyday work.

SPECIALIZATION

Specialization implies special and expert knowledge in a certain field of medicine. It is at once evident that no one person can have sufficient knowledge of all disease conditions to be able to carry out treatment satisfactorily, so it is advisable to specialize in our work to some extent. The idea of specializing in many small fields has been greatly abused, but this has been due largely to the demand for specialists made by the public. Just because one says he is a specialist does not mean that he has special knowledge in his field, and for this reason several of the scientific sections of the American Medical Association, together with special societies, have worked out plans whereby one who wants to practice a specialty can take an examination after he has had special training. If he is successful in the examination he will be granted a certificate which will show that he is qualified to be classified as a specialist in this field. This plan is an attempt to protect the people against so-called specialists who have not had special training. There should be some way for the patient and the public to know who are especially quali-

fied and who are not. Publicity given to this plan should be helpful.

Specialization in certain fields of medicine and surgery is essential in order to obtain the best results. This has been greatly overdone and has been the cause of much criticism. A physician is not qualified to take up special work until he has spent some time in general practice. Specialization does give an opportunity to concentrate on one particular line of work, and industry and experience bring special knowledge and skill in this work.

It has been said that this plan of specialization has greatly increased the cost of medical attention. If this is so, although it is doubtful that it is so, the result may be attributed directly to the demands of the public. These demands would not be made if the public could be kept well informed on these matters.

That the practice of medicine is changing is evident to everyone. Specialists dominate practice in certain localities, and the public is becoming convinced that the hospital supplies the most adequate plan for the treatment of human ills.

We are living in a transition period, and new methods of medical service are being created. Some plan must be devised whereby the family physician will remain the foundation of medical service, for his knowledge of the patient and his surroundings and his experience in such intimate and personal contact with patients makes him better qualified not only to diagnose and treat but also to direct the management of the case. His obligation is a serious one. No position in our social make-up requires a person of character and industry and deep appreciation of his moral responsibility more than does that of the general practitioner of medicine. With these attributes he has been a great success and will continue to be for a long time to come.

The changing character of medical practice has broadened the scope of the usefulness of medical practitioners, who at once become leaders in their communities in all public health work.

The White House Conference called by President Hoover during the last year will have a far-reaching influence and, as time passes, is certain to have a profound effect on the physical characteristics of the people of this country. It is not unlikely that this movement in the interest of child welfare may help to solve the problem of the cause and character of many chronic illnesses which the profession up to this time has not been able to understand.

PHILOSOPHY IN MEDICINE

The first field of philosophy is logic and is defined as the study of ideal methods in thought and in research. Logic tries to understand observations, a faculty that the old-time physician employed to such advantage, and one that must be taught more thoroughly. The visiting physician from the country passing through a medical ward makes a correct diagnosis from the appearance of the patient alone. The patient may have been submitted to all known tests and may have been studied by many scientists, but the country physician with much experience and with powers of observation and deduc-

tion which made him a philosopher of medicine arrives at the correct diagnosis, which may have baffled the scientists. If this is philosophy, then we need more of it in our studies and practices.

The second field is esthetics, or the philosophy of the beautiful both in art and in nature. Almost every physician has a rather keen esthetic sense. He appreciates the symmetry of health, and in his care of the sick he strives to restore his patients to a physical state that will not offend the esthetic sensibilities of observers. However, the physician uses the term "art" in its old sense, which may have nothing to do with esthetics. He calls his "craft" an art, and this aspect of medicine is worthy of a moment's digression. Until science began to make such strides, all phases of the practice of medicine and surgery were based on art, in the sense indicated. Art, or craftsmanship, is and always will be a most important part of medicine. A patient may be examined, medical treatment may be carried out, or a surgical operation may be performed in craftsman-like manner; or any of these things may, on the other hand, be done without regard for form or craftsmanship. The result of the examination, treatment or operation will usually depend on whether it has been done according to the principles of the craft. The art of caring for a sick person is learned by the student during his service in the hospital, but I fear that too little stress is placed on this form of instruction. A sick person does not want to be cared for by machine methods, because he feels, and rightly so, that he will not be as well taken care of as though he were having personal attention from his own physician. The practice of medicine, under any scheme, must give due consideration to the art of medicine.

Ethics is a part of philosophy and is defined as a study of ideal conduct. In no part of our social structure is it so necessary to understand and observe the strictest idea of what is right and what is wrong as in medicine. A more careful estimate of one's character should be made before one is permitted to undertake the study of medicine. There is no such opportunity, in any other field than medicine, for taking advantage of another as there is in everyday practice. The pernicious custom of division of fees depends largely on lack of character and moral principles. This will be corrected only by more careful estimate of the character and morals of those applying for entrance to medical schools. Many students leave college with the idea that feesplitting prevails throughout the country, and such is not the case. A course in medical ethics would not be out of place in the medical school.

Politics is another division of philosophy; is a study of ideal social organization. In this subdivision are placed our studies in the relationship that we have with all other political and social organizations. It is the obligation of the profession to continue studies to help to establish ourselves in our proper place in relation to the local, state and national government. We must all realize that an organization that is responsible for the health lives of so many individuals each year and that is economically responsible for the expenditure of so much time, energy and money has a large responsibility

and obligation. Much of the faulty legislation pertaining to medicine has been enacted because the legislators were not properly informed and because much pressure was brought to bear on them by irregular practitioners. Medical philosophers must continue to study the ideal social organization and to effect a plan whereby our relationship to society and politics will be most helpful.

The following officers were elected:

President-elect, E. H. Cary, Dallas, Texas.

Vice-President, George C. Yeager, Philadelphia.

Secretary, Olin West, Chicago.

Speaker of the House of Delegates, Fred C. Warnshuis, Grand Rapids, Mich.

ANNUAL MEETING OF INTER-STATE POST GRADUATE MEDICAL ASSOCI- ATION OF NORTH AMERICA

The International Assembly of the Inter-State Postgraduate Medical Association of North America will be held at Milwaukee Auditorium, Milwaukee, Wis., October 19-23, 1931.

Detailed information relative to the meeting can be procured by writing Dr. Edwin Henes, Jr., executive secretary, 759 North Milwaukee St., Milwaukee, Wis. See advertisement on page 19 this issue.

DR. C. W. HOPKINS HONORED

At the eleventh annual meeting held in New York City June 9, 1931, Dr. C. W. Hopkins, Chief Surgeon of the Chicago & Northwestern Railroad, was elected chairman of the medical and surgical section of the American Railway Association. Dr. Hopkins' election to the high honor must have come as a great surprise to him for the reason that the doctor was not present at the meeting, being confined to his home on account of ill health.

POINTING THE FINGER OF MOCKERY AND CRITICISM AT THE MEDICAL PROFESSION

A most specious plea for adoption of compulsory health insurance in America appears in the May 30, 1931, issue of *The Pathfinder*, published in Washington, D. C. The entire article is a serious indictment of the medical profession. It is crammed with misrepresentations and distortions of fact and premises contrary to fact. Statements made arbitrarily therein should be

dismissed as ridiculous if it were not for the erroneous impression that will be stamped in the minds of the misinformed or the partially informed to whom the magazine may be sent in the line of socialistic propaganda.

With the greatest unction in the world this article appears to champion the rights of the downtrodden sick of the country by pointing the finger of mockery and criticism at the medical profession and by making against this most underpaid body of humanitarians accusations that are actually sickening.

In a box head at the bottom of the front page of the journal appears the statement,

"A doctor is a man who makes his living directing patients to a specialist. . . . A specialist is a doctor who knows more and more about less and less. . . . A specialist is a man who can't tell what is wrong with you if you haven't any teeth."

"High Costs and High-Handed Methods are charged; Solution in Medical Service Under Way."

Excuse can't be made for these statements on the ground that they are meant to be humorous. For the article which they embellish is a deadly serious affair.

What a pity that the author did not investigate the results of public health insurance in some of those "sixteen foreign countries in which compulsory health insurance now obtains?"

What a pity that some kindly friend did not call to the attention of the author that this very system of "subsidized state health insurance" that he advocated is guilty of the same fickleness that he is now attributing to the medical profession itself as he states, "The Robin Hood system of robbing the rich and giving to the poor—but Robin was not allowed to continue the system. It leaves too much to the whim of the robber."

The statement is not quite clear even in the light of the preceding paragraph that reads, "Let us see what the doctors are accused of in the great chorus of complaint. First may be mentioned their unreasonable and unregulated charges. A grocer could not very well sell a head of cabbage to one man for ten cents and to another for ten dollars.

"THE DOCTOR IS ABOUT THE ONLY MAN LEFT WHO CAN CHARGE ACCORD-

ING TO HIS VICTIM'S ABILITY TO PAY. In New York recently a doctor charged the head of a steel manufacturing company \$150,000 for services extending over nine months—and took the matter to court when the patient showed impatience. The doctors justify this peculiar privilege of theirs on the ground that they treat many without charge—they claim to give \$365,000,000 in free services every year."

Further along in the article that pretends pompously to have probed the length, depth and breadth of the matter of medical economics, the author comments favorably on the fact that, "Many big industrial concerns, schools and other organizations have practical health services. . . . The Endicott-Johnson Shoe Corporation furnishes medical care to the 60,000 persons supported by their factory at a yearly cost of \$52.60 a family. For this they carry 28 doctors, nine dentists, 77 nurses, four pharmacists, seven laboratory workers and 42 minor employees."

In the face of this drastic instance of a corporation, and a lay corporation at that, practicing medicine which is as proper as it would be for the Illinois State Medical society to start a shoe factory may it be asked whether the Endicott-Johnson Shoe Company makes a profit on its dispensation of medical service at \$52.60 per annum per family? If it does make a profit then it would have no retort courteous to make to the charge that it is PRACTISING MEDICINE WITHOUT A LICENSE AND SHOULD BE SEVERELY FINED AND PUT OUT OF BUSINESS.

IF IT IS NOT MAKING ANY PROFIT ON THIS SERVICE THEN IS NOT THIS CORPORATION DOING EXACTLY THE SAME THING THAT THE WRITER OF THE EDITORIAL APPEARING IN "THE PATHFINDER" ACCUSES PHYSICIANS OF DOING? THAT IS, MAKING THE RICH MAN PAY FOR THE POOR MAN?

That is exactly what is happening. With this great, great difference. In the cases where the physician charges the rich man for four operations and then goes out and does eight similar ones for charity and at a personal loss the transaction has been performed through medical men and not through merchants who see the essence of trade and barter in every action of life. It is hardly to be expected that the Endicott-John-

son Shoe company would hire a dentist, a trained nurse or a surgeon to supervise the labor in their tanning department or their export trade section or their shipping rooms. Yet that is exactly what is done by this bargain medical service.

The editorial quoted offers another alternative. That is to have the cost of medical care "subsidized by the state." From all that we have been able to find out the revenue of the state is obtained from taxes. It is a notorious truth that the tax schedule of the rich man rests more lightly on his shoulders than the similar burden on the shoulders of the poor man. The rich man has a thousand and one ways of so shifting his income and his returns that he does not, he cannot feel the grind of taxation as does the poor man. A twenty per cent. cut in a salary of \$50,000 per annum or a four per cent. tax assessment of an income of \$50,000 does not entail the hardship that ensues from a twenty per cent. cut in a salary of \$500 per annum or a four per cent. tax assessment on that amount of income. Now if medical care ever becomes debauched to the point where it operates as a state subsidy what will be the result?

THE POOR MAN WILL BE PAYING NOT ONLY FOR HIS OWN BUT FOR A PORTION OF THE MEDICAL CARE OF THE RICH MAN.

And that too for a medical service of such impaired efficiency as even now is causing indignation in those very countries where compulsory health insurance is proving itself not only an old man of the sea but an old man with a venomous cobra in his hand.

It is well to know what you are preaching about before you begin to preach. Before you begin to search for a path it is well to realize just where the path is leading—to safety or to peril.

REPREHENSIBLE MEDICAL ENGLISH TWELVE VALUABLE POINTS IN THE LANGUAGE OF MEDICINE

1. "Case" must not be used for "patient," nor "cure" for "treatment."

2. "Tubercular" means "nodular"; "tuberculous" means "infected with the bacillus of tuberculosis."

3. "Cystoscope" is a noun and must not be used as any other part of speech.

4. It is possible to "operate a cotton-gin," *but it is not possible to "operate a patient"—nor his appendix.*

5. "Acute appendicitis" is common, but an appendix cannot be "acute."

6. "Acute abdomen" is beyond the pale.

7. "Pathology" means the "science of disease"; it is therefore absurd to speak of "pathology in the right lung."

8. "Positive serology" is the worst type of jargon; apparently "positive Wassermann reaction" is usually meant.

9. "Specific" and "luetie" are convenient to obscure meaning from patients' relatives, but "syphilitic" is better in writing for the medical profession.

10. It is incorrect to say the patient had "no temperature." One may say that there was "no elevation of temperature," but it is shorter to say there was "no fever."

11. "Shot" is perhaps the most abused and overworked word in medical literature. Shot is of lead.

12. Bad spelling is unpardonable, so a good dictionary is indispensable.

—*Jour. Med. Assn. of Ga.*

EDUCATIONAL COMMITTEE ILLINOIS STATE MEDICAL SOCIETY

PROMOTION OF HEALTH BY RADIO

Do you know that the Educational Committee of the Illinois State Medical Society sponsors health talks over the radio and that during the past twelve months over 400 have been given? Why not tell your patients to listen in at the following periods:

WGN—Tuesday noons—11:50 o'clock.

WJJD—Monday, Wednesday, Friday noons—11:45 o'clock.

WJJD—Every morning at 11:15 o'clock.

The above time is daylight-saving time, which is one hour ahead of standard time.

The *Chicago Daily News* on June 15, 1931, carried the following editorial concerning the promotion of health by radio:

"Dr. E. Starr Judd of the Mayo Clinic, in his presidential address, and other speakers at the Philadelphia meeting of the American Medical Association directed the attention of their pro-

fession, and of the nation generally, to the important part played, and to be played, by radio in the promotion of public health.

"Talks on various aspects of preventive medicine are exceedingly popular. The medical profession, in conjunction with the public health services, enjoys opportunities undreamed of in the past for the dissemination of useful information concerning modern means of preserving physical and mental wellbeing.

"The several seasons have their respective health problems. What to eat, how to dress, how to treat common colds, how to detect the first faint symptoms of disease and how to beware of quack nostrums are among the subjects welcomed by millions of persons possessing radio sets. Especially valuable is information on health to the residents of sparsely settled sections of the country, where doctors are few.

"Radio has many severe critics among the intellectuals, and broadcasters have much to learn from candid and just critics. It is but fair, however, to give credit to radio for the excellent work it is doing, and will do in ever increasing measure, for the welfare of the public."

RADIO TALKS PROVE POPULAR

During the past four years the Educational Committee has been most fortunate in being given generous time from the two stations WGN and WJJD. That the public listens in to these talks is shown by the fact that many requests for copies of the papers have been received from many states of the middle and far West.

HEALTH PROGRAMS ARRANGED FOR LAY ORGANIZATIONS

Do you know that during the year May 1, 1930-April 30, 1931, 553 health talks were scheduled by the Educational Committee. For the year 1931-32, lay groups are offered the following suggestions for health subjects to be presented by members of the Illinois State Medical Society:

MEN'S CLUBS:

1. Financial Value of Health.
2. The Business Man and His Stomach.
3. Disease Prevention and Health Preservation.
4. Health Problems in Illinois.
5. Animal Experimentation in Relation to Human Welfare.
6. What Everyone Should Know About Cancer.
7. Health vs. Business Inventories.
8. Physical and Mental Health.

WOMEN'S CLUBS AND PARENT TEACHER ASSOCIATIONS:

1. Health Problems in Illinois.
2. What Every Woman Should Know About Cancer.
3. Health Inventories.
4. Physical and Mental Health.
5. Our Duty to the Child in Prevention of Communicable Diseases.
6. Preparing the Child for Adolescence.
7. The Parent and Child Relationship.
8. Medical Science Protects the Child.
9. Animal Experimentation in Relation to Human Welfare.
10. Prevention of Disease.

HIGH SCHOOL ASSEMBLIES:

1. Our Debt to Medical Science (story of some famous scientists).
2. Some Important Phases of Health.
3. The Story of Infections.
4. Health Lessons Learned from the World War.
5. X-Ray and Radium.
6. What Every High School Boy and Girl Should Know About Cancer.
7. Health and Happiness.

OTHER SUBJECTS MAY BE SUGGESTED

All requests for speakers should be made through the office of the Educational Committee, Illinois State Medical Society, 185 North Wabash Avenue, Chicago, Illinois. Telephone State 4415.

THE MONTH OF JUNE BRINGS MANY REQUESTS TO THE EDUCATIONAL COMMITTEE

Member of the Department of Physical Welfare, University of Illinois, asks for material on flat feet, abnormal heart conditions, infantile paralysis, malnutrition, posture.

Physicians of Kewanee request assistance with diphtheria immunization campaign. Committee offers newspaper articles, material for speakers.

Kane County physician asks for material relating to health of children in rural schools.

Member of Evanston Woman's Club requests literature on cancer for distribution among the members of the organization.

President of the Woman's Auxiliary asks for copies of radio talks which might be of interest to the county auxiliaries.

Folders outlining the program of the Committee were furnished to all members of the Madison County Medical Society.

Eight obstetricians of the Illinois State Medical Society revised the pre-natal letters used by the State Department of Public Health.

MEDICAL LEGISLATIVE ACTIVITIES IN 1931 ILLINOIS STATE LEGISLATURE

Perhaps the economic depression had something to do with it. Whatever the cause, the recently adjourned session of the General Assembly was deluged with an unprecedented flood of bills, many of which would influence in one way or another the status of the physicians of Illinois. There were 2,031 bills introduced and about 200 were of especial interest to physicians. Tedious in extreme, it was nevertheless incumbent upon your Legislative Committee to review line for line each of the 2,031 bills in order to be fully informed of provisions which were of significance to the medical profession and to public health. The most important of these are listed herewith.

Those who wanted to break down the standards of medical practice appeared to have plenty of time and money to spend at the task. They manifested superior technique and great skill in lobby maneuvering. Their plan with the legislators was astutely devised as to make a tremendous appeal to those powerful human emotions which create spontaneous sympathy for the "oppressed" or "underdog." This strategy was pursued in such a way as to awaken no thought in the legislators concerning the interests which the public might have in medical matters. This method of procedure gave the cults an unusual degree of favor and even carried over to their side a few legislators who heretofore had stood steadfast for high educational requirements in medical practitioners.

Among the many cult bills creating new laws for special privileges the two osteopathic bills offered the most serious threat to the medical standards of Illinois. With 20 "ayes" they lacked but 6 votes in the Senate of carrying legislative approval which, if successful, would have given the osteopaths full and unlimited rights to do surgery. This is but one illustration of the difficulties incurred by your Legislative Committee in the Senate this year. Apparently the smaller membership led cult lobbyists to concentrate their efforts on that body. The economic unrest opened the way for the cults to bring what appeared to be a strong popular pressure to bear upon the Senators. On one occasion the Senate resolved itself into a

"committee of the whole" to listen to what the cults had to say—a privilege usually reserved for none but the most important measures.

A particularly dangerous type of legislation, from the public health point of view, found expression in House Bill No. 484, which was the work of our friend, Percival L. Clark, of Sanitology fame, who never misses a session of the General Assembly, who is founder and administrator of the Percival L. Clark Foundation for Health Research and whose prestige is greatly enhanced by the outstanding prominence achieved by his father, Anson L. Clark, in the medical history of Illinois and by the fact that his son is an able ethical physician in this State. The bill was in the form of an amendment to the public school law and found audience under the innocent appearing and quiet title of "AN ACT TO ESTABLISH AND MAINTAIN A SYSTEM OF FREE SCHOOLS" APPROVED JUNE 12, 1909, AS AMENDED. This measure would have prohibited all public health work and health instruction in the public schools and would have reduced Illinois to the scientific level of another State which denounces the theory of evolution by legislative fiat. House Bill 484 got sufficient attention from the General Assembly to be introduced and referred to the House Committee on Education. It required attendance on the Committee hearing by a representative of the State Medical Society because chances dare not be risked in legislative matters. Dr. Andy Hall was instrumental in killing the measure in the Committee. Pledging and soliciting votes and the exchange of "senatorial courtesy" might produce surprising results under circumstances of reduced vigilance.

Another situation which illustrates the everlasting vigilance necessary to prevent bad legislation and aid the desirable is the usual system of procedure which crowds the legislative calendar during the closing days of the session. Final action on fully one-half of the 2,031 bills was deferred until the last two weeks of the session this year. The members were tired and wanted to go home. Most of the outstanding bills which had strong support or opposition had been decided upon. The hot weather reduced both interest and energy. Under these circumstances good bills often die from sheer lack of

some interested person to see that a legislator calls the measure for action. Bad bills may get through because nobody takes the trouble to be on the job and to call attention to undesirable features. It is well to take no chances during the closing days if there remain before the Assembly any live bill of interest to the Society.

These circumstances required your Legislative Committee to function with exceptional alertness, unusual vigor and tenacious perseverance. More than 8,000 pieces of literature were sent out on one occasion during a single week by your Committee. These included communications which went to "key" men in the medical profession in every Senatorial District in the State.

The splendid co-operation and effective work of the medical profession throughout the State overshadows completely the irksomeness of lobby duty and prompts your Legislative Committee to express its deep appreciation for that sympathetic and highly intelligent support which made possible the satisfactory results obtained. Prompt and appropriate responses on their part to suggestions for action had a very telling effect upon every delicate situation which developed here in Springfield. The officers and counsellors of the Society responded effectively to every request made upon them. The Chicago Medical Society and the Educational Committee were very helpful and effective. The editor of our medical journal gave every communication from the Legislative Committee prompt consideration.

Cook County was never better organized for expressing the views of the medical profession upon legislative matters. Each physician in the Metropolitan area was listed according to Senatorial District. That system made possible the concentration of effort at the point where the need was greatest. Due to this well devised organized system on a number of occasions during the recent legislative session, legislators were effectively reached at an opportune moment in pivotal areas in response to communications from your Legislative Committee.

The modus operandi of your Legislative Committee shows the effectiveness of work done by the medical profession on legislative matters. A system of checking on the attitude of each Senator and Representative was inaugurated in the office of the Chairman. The vote of each legislator on bills of interest to the committee was

checked against the record of whether the legislator had been interviewed either personally by his family physician or through some other contact. An overwhelming majority of those interviewed voted satisfactorily to the interests of the medical profession. Legislators from districts where the medical profession was apathetic and took no significant interest in the controversies almost invariably favored the cults and drugless healers. This history shows clearly how legislation in this country must be influenced.

All difficulties to the contrary, however, the Society carried through its entire legislative program without a single setback. Without the splendid, sympathetic, prompt and appropriate co-operation of practically every physician in the State whose assistance was solicited, this success could not have been obtained.

Inquiries, requests for advice and assistance and letters of commendation which have come from quite a number of States indicate that the Society's legislative work in Illinois has attracted wide recognition. A very complimentary letter pertaining to this activity was received through Dr. Woodward of the A. M. A. from a prominent physician in London who desired more detailed information for use in combating the cult problem there.

The Legislative Committee wishes to acknowledge with deep appreciation the receipt of hundreds of congratulatory letters. The Chairman made it a point to answer every personal communication sent to the Springfield office. The name of each physician who took the pains to write was placed upon the permanent mailing list of the Committee, which now embraces nearly 2,000 names well distributed throughout the State.

This final report would be incomplete if it did not recognize the unflinching help of the officers and councillors of the Society, who in every way aided the Legislative Committee, and without their individual help the success of the year's work would not have been possible.

A copy of any bill mentioned in this bulletin may be had upon request.

Edward Bowe, M. D.,
Thomas P. Foley, M. D.,
John R. Neal, M. D.,
Legislative Committee, Illinois
State Medical Society.

THE MORE IMPORTANT MEASURES OF MEDICAL INTEREST CONSIDERED BY THE LEGISLATURE. MANY MINOR ONES ARE OMITTED

CULTS

- S. B. 197 To regulate physio-therapy, a very low grade drugless healer bill.....Defeated
- S. B. 360 Giving the osteopaths the right to do surgeryDefeated
- S. B. 361 Creating an Examining Board of OsteopathsDefeated
- S. D. 382 An attempt to elevate the chiropractic artDefeated
- S. B. 383 Creating a Board of Chiropractic ExaminersDefeated
- S. B. 489 Relative to registering naprapaths....Defeated
- S. B. 490 Creating a Board of Naprapathic ExaminersDefeated
- S. B. 491 Defining Naprapathy, with very low educational standardsDefeated
- H. B. 515 Another osteopathic measure.....Defeated
- H. B. 516 Still more osteopaths.....Defeated
- H. B. 886-887-888 All low-grade drugless healer billsDefeated

ANTI-VIVISECTION

- H. B. 453 The biennial anti-vivisection bill.....Defeated

APPROPRIATIONS

- H. B. 449 Appropriates \$39,746,656 to the Department of Public Welfare..... Passed
- H. B. 586 For the Board of Vocational Education, \$565,848 Passed
- Vocational rehabilitation of injured persons, \$252,400.
- Educating deaf, dumb, and blind children, \$126,018.
- Schools for crippled children, \$200,000.
- Disabled veterans of World War, \$4,000.
- Disabled veterans Spanish-American War, \$3,000.
- Veterans of Foreign Wars, \$250,000.
- Thirty-Third Division, War Veterans, \$4,000.
- Board of Education for the Blind, \$25,000.
- Chicago Board of Education for deaf and delinquent children, \$132,373.
- H. B. 711 Appropriating \$1,321,442 for expenses of the Department of Public Health. Passed

BARBERS

- H. B. 477 Amending certain sections in the Barbers' Act Passed
- H. B. 927 An attempt to liberalize the Barbers' ActDefeated

BEAUTY CULTURE

- S. B. 736 Liberalizing the so-called Beauty Culture ActDefeated
- H. B. 478 A similar attempt in the House.....Defeated
- H. B. 1069 Relative to the same.....Defeated

BIRTH REGISTRATION

- S. B. 278 Altering the method of keeping recordsDefeated
- H. B. 310-311 Two very laudatory measures introduced by the Department of Public Health and the medical profession to prevent coroners from skirting their duty in reference to those who die without medical attendance..... Passed
- H. B. 573 Another attempt to alter the keeping of records in reference to births and deathsDefeated

BLIND

- S. B. 29 An Act to make the State reimburse counties in full for blind relief.....Defeated
- S. B. 166 Would make relief for the blind payable out of the general revenue fund.....Defeated
- S. B. 468 To aid blind students in securing higher education Passed
- H. B. 67 The ophthalmia neonatorum bill, changing the penalty of the present law for those who neglect to treat the eyes at birth rather than failure to report inflamed eyes. This was a very laudatory measure passed by the Legislature by a safe margin, but was vetoed by the Governor. The House voted to set aside the veto, but the Senate failed to concur. A most unfortunate decision on the part of the Attorney-General and the Governor Vetoed
- H. B. 98 Liberalizing the Blind Act.....Defeated
- H. B. 133 Small appropriation to the Board of Education of Aurora for blind education Passed
- H. B. 208 A similar measure for Springfield... Passed
- H. B. 220 A similar measure for Evanston..... Passed
- H. B. 358 A similar measure for Decatur..... Passed

BOXING

- H. B. 261 Amending the Athletic Exhibition Act, specifying time when physicians are to examine contestants, and other provisions Passed

BULLET WOUNDS

- S. B. 268 An effort to penalize the physician and no other person for failure to report gun-shot woundsDefeated

CORRESPONDENCE SCHOOLS

- S. B. 48 A loosely drawn correspondence school act, not exempting the professions..Defeated
- H. B. 953 Providing a special board for correspondence schools. A very bad bill.....Defeated

CRIMINAL CODE

- H. B. 976 Requiring a psychiatrist to examine every person convicted of a crime in counties of over 500,000.....Defeated

DEAF

- S. B. 134 Relative funds for education of the deafDefeated
- S. B. 630 Creates a board of education for the deaf Passed
- H. B. 133-208-220-358 Referred to under blind.. Passed

DENTAL PRACTICE ACT

- S. B. 471 Prohibiting corporations from practicing dentistryDefeated
- H. B. 554 A commercial effort to penalize dentistsDefeated

EMPLOYMENT HOURS FOR WOMEN

- S. B. 121 Changing the statutory requirement from ten to eight hours, with certain exemptions, known as the Women's Eight Hour Bill.....Defeated
- H. B. 296 A similar measure to the above.....Defeated

EPILEPSY

- S. B. 221 To include post-encephalitis under the Epilepsy Act Passed

MEDICAL SCHOOLS AND HOSPITALS

- H. B. 484 An atrocious attempt to throw health teaching into the discard in the public schools. Spoken of elsewhere in this BulletinDefeated
- S. B. 610 Providing liens for hospitals on any insurance the Patient may have....Defeated

- S. B. 721-727 Creating a medical center commission for Chicago, were withdrawn in favor of H. B. 1142, a similar measure appropriating \$5,000 for expenses Passed
- H. B. 192 Changing the position of a physician's bill in the administration of estates. A good measure but it failed.....Defeated
- H. B. 1109 Creating in the University of Illinois a department to examine toxicological specimens for coroners.....Defeated

MIDWIVES

- S. B. 232 Radically lowering the present educational requirements for midwives...Defeated
- S. B. 233 A similar effort to amend the Medical Practice ActDefeated

NARCOTICS

- H. B. 557 Making possession of hypodermic syringes by anyone other than physicians, dentists, etc., unlawful..... Passed
- S. B. 390 Setting forth a penalty for anyone carrying narcotics or drugs to prisonersDefeated
- S. B. 191 Repealing a portion of the Pharmacy ActDefeated

NURSES

- S. B. 68 Setting forth qualifications for public health nurses Passed
- S. B. 605 Withdrawn in favor of H. B. 1081, changing the age from twenty-two to twenty-one years for licensing nurses Passed
- H. B. 293 Exempting nurses from jury duty....Defeated

OLD AGE PENSIONS

- S. B. 4 Relief not to exceed \$260 a year over age seventyDefeated
- S. B. 92 Similar, with amount \$360 a year....Defeated
- S. B. 132 Would levy an annual tax of one-half of one mill on the dollar for old age pensionsDefeated
- S. B. 388 Creates a commission to study old age pensions. Withdrawn in favor of S. B. 511, a similar measure..... Passed
- H. B. 165 Another old age pension bill.....Defeated
- H. B. 308 Also levying a tax for old age pensionsDefeated

WOOD ALCOHOL

- S. B. 142 A wood alcohol measure.....Defeated
- H. B. 301 A wood alcohol measure.....Defeated
- H. B. 788 Regulating the sale of wood alcohol and its derivatives. An excellent attempt in the right direction.....Defeated

WORKMEN'S COMPENSATION

- There were eight or ten efforts to amend the Act, practically all of which had something to do with the physician's work.
- S. B. 459 All were defeated except S. B. 459, and the proponents of the Bill acceded to all the suggestions made by your Legislative Committee and removed all objectionable medical features to the Bill..... Passed

NEW LAW CLARIFIES CORONERS' DUTIES

To correct a situation which reflected seriously upon the integrity of the medical profession and which threatened the status of Illinois in the United States death registration area, the Fifty-

seventh General Assembly of Illinois was asked to amend the Coroners' Act and the Registration of Births and Deaths Act, so as to make absolutely clear and unmistakable the duties and responsibilities of coroners and local registrars concerning the execution of death certificates in cases where death occurred without the attendance of a physician. The legislature granted this request when it passed House Bill No. 310 and House Bill No. 311. Both are now laws. In Bill No. 310 the amendment states specifically that in case of death without medical attention the coroner, instead of the registrar, shall be called and that the coroner shall proceed as set out in section 10 of the Coroners' Act. Both of these bills were introduced by Honorable Frank C. Thompson.

In Bill No. 311, which amends section 10 of the Coroners' Act, it is specifically provided that in all cases where death occurs without medical attendance the coroner shall be called and that he shall take charge of the body, make a preliminary examination and issue a certificate of death, or if death is not from natural causes then to hold an inquest.

In Cook County since 1928 the number of death certificates signed by local registrars jumped from 0 in 1928 to 1,070 in 1929 and to 1,605 in 1930. For the same reason deaths ascribed "unknown" causes in Cook County jumped from 13 in 1927 and 9 in 1928 to 97 in 1929 and 330 in 1930. Of the 330 deaths reported from unknown causes, local registrars signed 325.

The cause of this increase can not be shown in statistical computations. For that reason the student of vital statistics who has not access to the certificates holds the medical profession responsible for the excessive number of deaths for which the cause is unknown.

Because of the great increase in death certificates so executed in Illinois the federal bureau of the census took unfavorable notice of the situation, pointing out that from no other city in the United States than Chicago were so great a ratio of the deaths ascribed to "unknown" causes.

To ascribe a death to "unknown" causes is to make practically valueless a certificate of death from any but a purely legal standpoint. The number of deaths nor the death rate has any particular significance from a public health stand-

point unless the specific causes of mortality are known.

Nearly all of the 1,300 local registrars in Illinois are non-medical officials. They have no authority for calling witnesses or for otherwise collecting facts which would disclose the cause of death even if they were trained in this type of activity.

Coroners are often medical officers and they are clothed with legal authority which enables them to collect all pertinent information about deaths which occur without medical attendance.

The statutes as they now read make plain and unmistakable the duties of these officials, making mandatory on the coroner not only the investigation into the causes of death, but also the execution of death certificates in all cases where death occurs without medical attendance.

CONVALESCENT SERUM AND SODIUM CITRATE FREE TO PHYSICIANS

The last paragraph in an editorial which begins on page 117 of the January 10, 1931, issue of the *Journal of the American Medical Association* reads as follows:

"It is, indeed, fortunate that research institutions have taken up the burden of supplying convalescent poliomyelitis human serum, since this important health department activity has been quite neglected though Netter advocated its use in 1910. The value of such serums is apparently well established and of practical therapeutic importance even in the absence of controls. The prophylactic use of convalescent serum for susceptible contacts cannot be advocated until the supply can meet the drastic need of epidemic periods."

Acting upon this suggestion, the Illinois State Department of Public Health undertook to make available an adequate supply of convalescent poliomyelitis human serum sufficient to meet all anticipated needs in Illinois. At Springfield and Chicago there is now on hand enough of this serum to treat 200 cases. It is available free of cost to any physician in the State who will ask for it. Instructions concerning administration go with each therapeutic vial.

It is hoped that the medical profession will take advantage of this opportunity to use the serum. The collection of convalescent poliomyelitis serum entails considerable expense and in-

volves no little time and effort. Furthermore, it appears that infantile paralysis is by far the most important cause of disability among the 16,000 physically handicapped children in Illinois. If the convalescent serum will prevent paralysis in these cases, and evidence indicates that it will, the physicians cannot afford to neglect its use when circumstances make possible the obtaining of it. Early diagnosis and the administration of convalescent serum prior to the onset of paralytic symptoms are imperative if paralysis is to be prevented.

The indications are that poliomyelitis prevalence will increase sharply during the next few months. All but 40 of the 404 cases which occurred last year took place after July, a total of 291 cases being reported during August, September and October. Past history of the disease suggests a return wave this year. Statistics indicate that over one-half of the untreated acute cases terminate either in death or permanent disability.

In all cases where the service is practicable a physician from the State Department of Public Health who is especially qualified in that field will be detailed upon request to consult with and assist a local physician in connection with the administration of the poliomyelitis convalescent serum.

For physicians who wish to use whole blood therapy for intramuscular administration, the Department has for free distribution a supply of sodium citrate. This will keep the blood drawn from the donors from coagulating prior to its use. Whole blood therapy seems to have a value in treating poliomyelitis cases while its benefit in preventing or aborting measles in children appears to be unquestionable. Physicians outside the range of easy and quick transportation facilities might profit by keeping on hand a supply of the sodium citrate for use in emergencies. Full instructions concerning the use of this material go out with each package.

ILLINOIS MATERNAL MORTALITY COMPARED WITH OTHER STATES AND FOREIGN COUNTRIES

Universal interest in the rate of fatal outcome of childbearing makes accurate information on this subject extremely important. From some sources we hear that the United States experiences a greater loss of mothers from puerperal causes than any other first class nation of the

world. This assertion is vigorously denied by others who stoutly maintain that statistics which show excessive rates in this country have not been properly analyzed or else they have been deliberately juggled in order to serve better the user's purposes.

In the official classification of deaths from puerperal causes, twelve sub-classes are used in order to give a clear idea to the student as to the factors involved in each fatality. When death certificates are honestly executed, the sub-classification when the data are compiled would seem to be sufficient to prevent false statements of significant magnitude. At the same time there are a number of factors involved which will cause certain differences that prevent statistics in different countries from being strictly comparable.

The question of abortions always arises in connection with maternal mortality. Unless a case has come before the coroner there is no legal means available to statisticians for going behind the death certificate. If false or dishonest statements have been expressed on the death certificate that falsity becomes a part of the official records of the community, state and nation.

On the other hand, it may be asserted by those who interest themselves in safeguarding motherhood that the loss is no less serious where abortion is the cause than when some other specific factor is the responsible lethal agent.

Then there is the matter of completeness of reports. Maternal death rates are computed in the United States on the basis of the number of live births while in most foreign countries both live and stillbirths are considered. Birth registration in the United States has never been as complete as death registration. It is quite possible that from 5 per cent to 10 per cent of the births which occur in this country escape registration entirely. An even larger percentage of stillbirths probably escape. Mary Breckenridge, superintendent of the Frontier Nursing Service of Kentucky, reports that a study made by her with the cooperation of the state registrar indicated a birth rate of 46 per 1,000 population among the mountaineers of Kentucky. The state reports annual rates that vary between 20 and 25. Similar conditions doubtless prevail in many other states. Europeans have the reputation of respecting laws and

customs to a much higher degree than Americans. This suggests that birth registration is more complete in the European countries. That would cause an apparently lower maternal death rate. This is a point to bear in mind when comparing data.

The death rate attributed to puerperal causes varies strikingly and somewhat inexplicably from year to year in Illinois. In 1929, for example, there were 818 fatalities charged against these causes. In the year before the number was 694, and it was 717 in 1927. The 1928 figure was 848. The number of births has declined each year since 1926. This peculiar variation in the maternal death rate, which bears no relation to the birth rate, suggests that unlawful abortions account for a significant number of fatalities. Tangible evidence to prove that suggestion does not appear on the death certificates, however.

Statisticians must abide by the information found on the death certificates. Analyzed with as much detail as the data permit, this information is set forth for Illinois in Table 1, showing the experience since 1927.

TABLE 1
DEATHS FROM PUERPERAL CAUSES,
ILLINOIS

Rate per 1,000 births.	1929		1928		1927	
	No.	Rate	No.	Rate	No.	Rate
Abortion	20	1.3	8	.6	22	.2
Ectopic	58	.4	38	.3	43	.3
Other accidents of pregnancy	17	1.3	15	1.1	15	1.
Puerperal hemorrhage ..	102	.8	72	.6	81	.6
Cesarean	37	.3	31	.2	41	.3
Other surgery	12	.9	9	.7	6	.4
Accidents of labor.....	57	.4	55	.4	35	.3
Puerperal septicemia....	252	2.0	237	1.8	234	1.7
P u e r p e r a l phlegmasia, alba dolens, embolus, sudden death	34	.3	33	.3	47	.3
Puerperal albuminuria and convulsions	103	1.5	181	1.4	187	1.4
Following childbirth (not otherwise defined) ...	4	.3	10	.8	3	.2
Puerperal diseases of breast	2	.1	0	—	3	.2
Total.....	818	6.3	694	5.2	717	5.1

The subclassifications are international in scope so that a careful compilation of deaths should result in strictly comparable data. On the other hand, if the cause of deaths which result from unlawful attempts at abortion or unlawful operations is hidden in death certificates under such items as puerperal hemorrhage or

any one of several others, there can be no justifiable comparison of statistics in one country with those in another except upon the grounds that such practice is universal. In a State the size of Illinois, the inclusion of 75 to 100 deaths which are unlawfully attributed to natural puerperal causes, would make a high rate instead of a moderate or even a low rate.

In New South Wales, a state of Australia which, with a total population of about 2,500,000, reported 351,160 visits of expectant mothers to health centers during 1929, apparently exercises the greatest care in classifying maternal deaths. "Every death of a woman during the child-bearing period in which there is any possibility of a puerperal relationship, is considered as being due potentially to puerperal causes until or unless proved otherwise," says the director of the division of maternal and baby welfare in his 1930 annual report. "These deaths," he continues, "having been collected in the first instance by the Government Statisticians' Department, are referred to this Division so that a complete investigation may be made by a medical officer."

The number of maternal deaths attributed to illegal operations under this carefully executed scheme varies from 3 per cent to 15 per cent of the maternal deaths from all puerperal causes. The average for the 9 years, 1920-1929, was 11.8 per cent. with a low (1928) of 9.7 per cent. and a high (1926) of 14.5 per cent. Excluding these deaths the maternal mortality in New South Wales was 5.6, 5.4 and 4.6, respectively, for 1927, 1928 and 1929. Including the deaths from illegal operations the rates per 1,000 births for these years in New South Wales and from all causes returned as puerperal in Illinois, were as shown in Table 2.

TABLE 2

MATERNAL DEATHS PER 1,000 LIVE BIRTHS

	1929	1928	1927
New South Wales.....	5.3	6.0	6.5
Illinois	6.3	5.2	5.2

If it is assumed that 10 per cent of the births in Illinois are not reported, the actual maternal death rate per 1,000 births, when allowing for this shortage, falls to a point below that in New South Wales and that in many nations.

Except for 1929 the Illinois rates compare favorably with those of New South Wales, whether the fatalities from illegal operations are

included or not. The most unsatisfactory feature of the comparison is the sharp decline in the 1929 New South Wales experience and the sharp increase in that of Illinois.

The New South Wales data were used for comparison because the state is relatively new, like Illinois, and because the maternal hygiene program seems to be unusually well organized and carried out. Also the statistics are collected with great care for accuracy.

Aside from other considerations there comes the personal equation for which the medical classifier is responsible. Death certificates call not only for the cause which in the opinion of the physician immediately precipitates death, but for any contributory cause or causes of which there is knowledge. Thus if a pregnant woman is involved in an automobile accident and dies three weeks later from puerperal hemorrhage, the latter might be put down as the cause and the automobile accident as the contributory cause. One medical classifier would record the death as of puerperal origin and another of accidental. Thus statistics in one nation may differ significantly from those in another for no other reason than a difference of opinion between classifiers.

The Illinois statistics compiled at Springfield by a medical statistician of long experience and first class training show a noticeably lower maternal death rate than the statistics compiled from the same certificates at Washington by the federal bureau of the census. The figures for three years are given in Table 3.

TABLE 3

ILLINOIS MATERNAL MORTALITY PER 1,000 BIRTHS

	1929	1928	1927
Federal statistics	6.8	5.7	5.6
Illinois statistics	6.3	5.2	5.2

The higher rates attributed to puerperal causes by the bureau of the census indicate a liberal attitude on their part toward maternity as a hazard of life. The rates computed in Illinois are 7 per cent lower than those computed in Washington. That degree of difference on a national scale would indicate an enormous difference in the number of deaths attributed to puerperal causes by a liberal classifier as compared with one who allows contributory causes to account for some fatalities.

The Illinois statistician assigned 818 fatalities to puerperal causes in 1929. Using identically similar death certificates the U. S. bureau of the census assigned 874 deaths to puerperal causes in Illinois in 1929. While it is felt that the Illinois statistician placed in the puerperal classification every certificate which should have been so classified without reasonable doubt, this difference in classifying is pointed out merely to indicate how the personal factor creeps into statistical computations in a perfectly honest way which sometimes makes significant differences in the conclusions.

In New York state the health department statistician assigned 1,172 deaths to puerperal causes in 1929, while the federal bureau of the census placed the number at 1,216. For the same year the state figures in Pennsylvania were 1,150 against 1,232 by the federal statistician. Thus for Illinois, New York and Pennsylvania the federal statistician assigned to puerperal causes in 1929 a total of 180 more deaths than did the state statistician. At this rate the 15,684 deaths attributed to puerperal causes in the United States registration area in 1929 was 900 higher than would have been so classified by the statistician in either of the three states named.

If it is presumed that birth registration is 10 per cent less complete in the United States than in most foreign countries where statistics of a comparable character are kept, and if it is assumed that the federal bureau of the census is 6 per cent more liberal than are the foreign statisticians with regard to puerperal causes of death, then the maternal death rate for the United States in Table 4 in the 1928 column would be 5.6 instead of 6.7, and the rate in the 1927 column would be 5.4 instead of 6.4. This change would make the maternal death rate in the United States compare much more favorably than it does with those in foreign countries.

The statistics in Table 4 are the latest and most complete available from the statistical office of the League of Nations.

The considerations set forth above suggest that our conditions of maternal hygiene may not be as bad as the unanalyzed statistics indicate. There is, however, plenty of room for improvement.

TABLE 4

DEATHS FROM PUERPERAL CAUSES PER 1,000 BIRTHS AND STILLBIRTHS

	1928	1927
Australia .....	...	6.1
Czechoslovakia	3.9	3.5
Denmark	2.6	2.1
Egypt	3.8	3.7
Estonia	4.9	4.0
Finland .....	...	3.0
Germany .....	...	3.5
Greece	6.3	6.0
Hungary	3.3	3.0
Netherlands	3.4	3.4
Norway .....	...	2.4
Sweden	2.5	2.3
Scotland	7.0	6.4
Northern Ireland	5.2	4.8
Uruguay	2.3	2.1
England and Wales	4.2*	4.1
UNITED STATES	6.7	6.4

*Per 1,000 Live Births.

SUICIDE IS BECOMING A NATIONAL HABIT AND A SOCIAL PROBLEM OF FIRST IMPORTANCE

That gentle gesture, suicide, appears to be one of the socialistic fashions this once supersane government is adopting along with bureaucratic control, a superfluity of statutes and other conspicuous non-democratic ideas of decadent old-world countries.

In "The Spectator," a New York insurance journal of high repute, Dr. Frederick L. Hoffman claims that suicide is not only becoming a national habit and a social problem of the first importance, but he advocates organization of a national society for its study and prevention with branches in all cities.

Writes Dr. Hoffman in part:

"Every student of the suicide problem knows full well that adequate methods of prevention could easily save a large proportion of deaths from self-destruction, which now measurably increase our annual death-rate.

"On the basis of current statistics, the annual loss of life by suicide in Continental United States may be conservatively estimated at between 18,000 and 20,000.

"Unfortunately, there are no means of estimating accurately the number of attempts at suicide in this country which fail, but which in the light of such data as are available, easily reaches 30,000 and probably more.

"In other words, combining the suicides who succeed with those who fail, there are some 50,000 more or less mentally unbalanced persons in

this country, of whom every year about two-fifths succeed in putting an end to what is, in many cases, a life well worth saving.

"What is needed is national organization well equipped to concern itself seriously and effectively with both the scientific study of the subject and methods of prevention and relief in the many cases which can be saved from the ignoble fate of self-destruction.

"The suggestion offers the greatest present-day opportunity to intelligent philanthropy to render service of the greatest possible value to the nation.

"The suicide death-rate of one hundred American cities has increased from 15.4 per 100,000 population in 1900 to 20.0 in 1930. Although it jumped as high as 21.5 in 1908, that was an exception. A distinct upward trend occurred during the last decade. The twenty cities with the highest suicide rates are Little Rock, Arkansas; Davenport, Iowa; Sacramento, California; San Francisco, California; San Diego, California; Terre Haute, Indiana; Richmond, Virginia; Spokane, Washington; Portland, Oregon; Tacoma, Washington; Denver, Colorado; El Paso, Texas; Jackson, Michigan; Pueblo, Colorado; Indianapolis, Indiana; Oakland, California; Manhattan and Bronx, New York; Gary, Indiana; St. Louis, Missouri; Tampa, Florida.

"The rates for Little Rock and Davenport, being based on comparatively small populations, must be accepted with reserve.

"The localities indicate that suicides are not limited to large cities, but occur throughout the country, even in the smallest villages, where life is supposed to be free from the harassing anxieties of the modern struggle for existence.

"The nation may well pause and reflect upon the tragedy and sorrow and great economic loss represented by some 20,000 cases of self-destruction, and by possibly 30,000 or more attempts at suicide, which for some reason or other failed of their purpose during the year under review.

"Half of these, I feel sure, could have been prevented; and I speak in the light of forty years of an active interest in the subject of self-destruction, believing that if timely aid and qualified advice were forthcoming at the right time, many a valuable life might be spared.

"Only a national society for the purpose of studying the prevention of suicide, with branches

in all the principal cities, can hope to cope with the problem in all its vast and intricate ramifications.

"Society itself is largely responsible for a large share of the annual toll of deaths by self-destruction.

"For it is the shams of our civilization that lie at the root of the evil and are the productive causes of the confusion which inevitably at present drives thousands to seek in suicide the only way out."

Further Dr. Hoffman notes that business depression invariably results in numerous suicides; that an increasing number of those who end their lives do so by jumping from the higher floors of tall buildings and that there are countless cases where murder and suicide are combined.

"From the bridge which spans the rocky gorge of the Arroyo Seco, one of the most beautiful spots in the beautiful garden city of Pasadena, Calif., thirty-two men and women have hurled themselves to destruction. This Colorado street bridge has become such a temptation to would-be suicides that the Pasadena police plan to install safety nets on each side of bridge. The *Boston Herald* remarks on this situation: "Pacific Coast cities as usual report suicide rates above the average. This phenomenon is attributed to the climate and to the fact that many persons go there in a final effort to recoup their health or their fortune, and failing, take their lives."

CHICAGO MEDICAL BLUE BOOK DIRECTORY

One of the handiest volumes that comes to our desk is the Chicago Medical Blue Book Directory. Published by McDonough & Company, 11 East Austin Avenue, Chicago, Illinois. The forty-third annual edition is just off the press and as usual contains accurate data of physicians, surgeons and druggists. There are 6,488 physicians and surgeons and 2,314 druggists listed in its pages with detailed data and information relative to each. There is also a wealth of information of every day use to physicians, dentists, and druggists concerning medical organizations, societies, hospitals, sanitariums, medical schools and colleges.

As a convenient ready reference medical di-

rectory the Chicago Medical Blue Book is invaluable.

The compilers of the book are to be congratulated on the general chronological arrangements throughout. This is important when one wants authentic information of present and past medical affiliations of our physicians and surgeons. The price of the Blue Book is \$7.50 per copy.

ILLINOIS PHYSICALLY HANDICAPPED POPULATION 16,000

Definite records show that there are 10,011 physically handicapped individuals under 21 years of age in Illinois. It is estimated that reports still to be received will bring the number of recorded cases up to 12,000. These statements are found in the report of the Commission on Physically Handicapped Children, appointed by the Governor in conformity with a joint resolution of the Fifty-sixth General Assembly. The Commission has been active for many months and has been surprisingly successful in obtaining first hand information on the handicapped population. The report includes fairly complete records from 64 counties and partial records from 13 other counties. On the basis of these data the Commission estimates that there are 2.2 physically handicapped children per 1,000 general population or a total of more than 16,800 in Illinois.

Of outstanding interest in the report are the causes to which the handicapped conditions were attributed. Infantile paralysis was designated three times as frequently as any other single cause. In an analysis of 7,716 case records which were complete enough to justify classification, responsibility for the handicapped conditions appears as follows:

Infantile paralysis	2,308
Spastic paralysis	1,062
Bone infection	907
Tuberculosis of spine	650
Accidents	555
Congenital deformity (unspecified)	497
Congenital deformity of joints	468
Club foot	418
Bow legs from rickets	386
Flat feet	268
Arthritis	197
 Total these causes	 7,716
Miscellaneous	2,295
 Total	 10,011

The remainder of the 10,011 handicapped whose location is known owe their condition to a large group of causes that includes such things as heart disease and malnutrition.

The very large part played by infectious diseases in the production of the physically handicapped gives to this problem an important public health feature. Infantile paralysis alone is credited with responsibility for 23 per cent. of all the physically handicapped child population. To no other single cause is attributed more

than 7 per cent. of the crippling conditions recorded. Spastic paralysis and bone infections were credited with 10 and 9 per cent. respectively, but these two are groups of causes.

It is probable that most of the physically handicapped conditions attributed to infantile paralysis in this report have developed since 1916. Since that year 4,425 cases of that disease have been reported. These case reports are admittedly incomplete. So is the census of physically handicapped. If the ratio between the reported and the total of the two conditions is about the same, it appears that 52 per cent. of persons who suffer attacks of infantile paralysis are left with more or less permanent physical deformity.

Another important factor is mortality. Since 1916 infantile paralysis has been charged with 1,033 deaths in Illinois. Thus it appears that 3 out of each 4 cases of this disease prove either fatal or physically disabling to the victims.

This consideration suggests the importance of utilizing to the utmost the facilities for preventing and treating the disease. To this end the State Department of Public Health has collected and offers free to physicians convalescent serum. Early treatment with this serum prevents the onset of paralysis in a high percentage of cases and reduces the mortality to a minimum, according to reports on experimental observations. Pasteurization of milk, the isolation of cases and the avoidance of crowds by the susceptible are important ways to prevent the spread of infantile paralysis.

Tuberculosis of the spine was given as the cause of deformity in 650 cases. Prevention of this condition depends to a considerable degree upon the eradication of bovine tuberculosis and upon the pasteurization of milk.

Communicable diseases of one kind or another were probably important factors in producing the crippling condition in many of the other physically handicapped. Perhaps 40 per cent. of the difficulty could be traced rather definitely to infectious diseases. This indicates the magnitude and importance of the public health problem in connection with reducing the physically handicapped population.

Malnutrition was charged with the responsibility of 386 cases of physical impairment that were reported as handicapped. Club feet were found in 418 children. Preventing malnutrition is simply a matter of reasonably good infant and child care. Where active disease plays no pronounced part the proper balancing of the diet together with a reasonable amount of sunshine keeps nutritional difficulties from arising.

Club foot can nearly always be corrected satisfactorily by surgical measures. Many cases have been so skillfully managed that nothing short of a most careful examination would disclose evidence of the former condition.

In short, there are available preventive and corrective facilities which, if fully applied, would cut down the future handicapped population and reduce tremendously the impairment of those now suffering.

AMERICAN CONGRESS OF PHYSICAL THERAPY

The tenth anniversary session of the American Congress of Physical Therapy will be held October 5, 6, 7, 8, 1931 at the Hotel Fontenelle, Omaha, Nebraska. Appreciating the desirability of clinics and clinical demonstrations, the program committee has set aside the mornings for these purposes. It will be the first time that the society will have available ample clinical material for medical and surgical services. The cooperation of the University of Nebraska, College of Medicine, and the Creighton University School of Medicine has made this possible. In the section on Eye, Ear, Nose and Throat, tonsil clinics will be conducted daily during the first three days of the meeting. Electro-surgery for tonsils has found a definite place in the armamentarium of many surgeons. Prominent specialists will demonstrate the various methods and technics now being employed.

The subject of fractures will be thoroughly covered in the surgical clinics. Leading orthopedic surgeons will demonstrate every phase of the work emphasizing the indications and contro-indications for physical therapy.

In the medical section and in the medical clinics every allied specialty is represented. The subject of pneumonia will be adequately discussed as will such subjects as come in the fields of pediatrics, gastro-enterology and dermatology. Massage, therapeutic exercise and hydrotherapy will be presented by specialists in these fields.

An unusual feature of this tenth annual gathering is the fact that numerous local and state organizations are lending their efforts for its success. Among these are the Omaha-Douglas County Medical Society, the Omaha Roentgen Ray Society, the Nebraska division of the American Society for the Control of Cancer and several others. A joint meeting with the Omaha-Douglas County Medical Society will be held on Tuesday evening, October 6.

For preliminary program and other information write to the American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

Correspondence

A CORRECTION

Dear Doctor Whalen:

In my article on "Carbon Monoxide Poisoning," Volume LIX, No. 5, May, 1931, I find a typographical error under *Treatment*, page 387, line 10, which should read carbon dioxide instead of carbon monoxide. Could a short notice of this error be inserted in one of the future issues of the ILLINOIS MEDICAL JOURNAL?

WM. D. McNALLY, M. D.

INCREASE IN POLIOMYELITIS IN ILLINOIS

Springfield, Illinois, July 3, 1931.

To the Editor: In view of the fact that 404 cases of poliomyelitis were reported in this state last year, with 60 deaths; and in view of the fact that recent investigations and experiments have indicated that convalescent serum is the very best treatment when administered early before symptoms of paralysis occur, the State Department of Public Health has recently collected convalescent serum which is now available.

Enclosed herewith is an article, which, if you would give it some publicity would no doubt be welcomed by the physicians who are unfortunate enough to meet some of these little sufferers, and would be glad to avail themselves of this serum which can be had without cost by applying to the Department of Public Health. (Page 101.)

You will also find some information concerning Maternal Mortality in this state in comparison with that of some other states and foreign countries. *I know you have been interested in this matter and have always thought that the statistical comparison was made on a different basis in foreign countries from the way that our data are collected, which is absolutely true.*

Enclosed also find a leaf from our HEALTH MESSENGER giving a summary of the survey of Physically Handicapped under the age of 21 years, in this state.

Andy Hall,
Director, Department of Public Health.

UNDULANT FEVER A BRUCELLA INFECTION

To the Editor: After carefully studying 35 cases of Undulant Fever (The Mimic) in my personal practice, I sincerely believe Hodgkin's disease to be a Brucella infection.

Certain statements made by earnest workers on Hodgkin's disease in the past and a careful comparison of the clinical course of both these maladies in my private practice, leads me to make this open appeal to the profession, to either approve or disapprove this opinion.

The laboratories of the State Department of Public Health, I am sure, will make any test, culture or tissue examination from Hodgkins

cases, if specimens are submitted with the request of just what is desired.

Trusting you will find space for this open appeal.

R. O. Stites, M. D.

ILLINOIS HOSPITAL DATA

On the average each group of 120 people in Illinois supports a hospital bed if the 33,286 beds maintained in Federal and State institutions are taken into account.

The 64,063 beds and 3,297 bassinets are housed in 394 hospitals and sanitariums distributed throughout the state. Of the institutions 85 are controlled by the public, 94 by churches, 12 by fraternal and industrial agencies and 173 by private individuals or organizations. The public, fraternal and some of the church hospitals and sanitariums draw heavily upon public funds and voluntary donations for financial support while some of the church institutions are able to operate upon income from patients alone only because of a heavy contribution of personal services.

The cost of maintaining an occupied bed in the county tuberculosis sanitariums varies from \$750.00 to \$1,500.00 per year. The average minimum cost of an occupied hospital bed is probably no less than the smaller figure. This gives a basis for estimating the cost of hospital service in Illinois.

Of the 394 hospitals and sanitariums, 30 did not meet the requirements of the American Medical Association for listing in its latest register.

The hospital beds were 68 per cent occupied during 1928 and the total number of strictly hospital beds was in the ratio of 1 to 255 people.—*Illinois Health Messenger*.

TREATMENT OF PLACENTA PRAEVIA

According to M. Pierce Rucker, Richmond, Va. (*Journal A. M. A.*, May 9, 1931), there are certain fundamental principles in the treatment of placenta praevia that should be observed whether the patient is treated in general practice or in a well equipped obstetric hospital. The significance of a hemorrhage in the last half of pregnancy should not be minimized. Too often the patient is encouraged with the hope that it will not recur. No pelvic examination should be made until everything is in readiness to manage the patient should it be found that the placenta is presenting. A vaginal pack done as a makeshift, i. e., until help can be secured or the patient can be taken to a hospital, probably does more harm than good. A better plan is to give the patient a dose of morphine and disturb her as little as possible. The importance of blood transfusions is self-evident. One cannot show the cervix too much respect. Dilatation should not be hurried and should be complete before any operative delivery, except a Braxton Hicks version, is attempted. If Voorhees bags are used, a number 5 is preferable. When the bag is about to come through the cervix the patient should be on the delivery table and everything should be in readiness for an

immediate delivery should that be necessary. The extra-ovular placement of the bag is preferable. Post-partum hemorrhage has not been a problem in the author's cases, but its danger should be constantly borne in mind. In the interest of the child, cesarean section has a place in complete and partial placenta praevia.

A GOVERNOR LOOKS AT CHIROPRACTIC

Governor Buck of Delaware has returned to the legislature, without his approval, a bill to create a board of chiropractic examiners and to regulate the practice of chiropractic. His summarization of the reasons for his veto is so clear and terse that it should be read by the legislators and governors of every state that is threatened or already afflicted with this cult. His statement follows:

The purpose of the act, as I understand it, is to legalize the practice of chiropractic in this state. Practitioners of this cult are not recognized now. Do they profess to be doctors in the same sense of the term as is commonly understood to apply to men and women of the medical profession? In so far as I am able to determine, there is not a recognized medical school in the country that includes in its curriculum a course in chiropractic. This fact in itself seems singularly significant.

Even to the lay mind the idea that all disease of whatever character is due to spinal displacements of a mild sort, and that cures of such ailments as tuberculosis, smallpox, diphtheria, scarlet fever and others can be effected by manipulation and fingering of the spine is preposterous.

Before returning this bill to you I have satisfied myself that the training and education a chiropractor, or drugless healer, needs to practice his art does not fit him properly to advisedly treat the sick, inasmuch as he is not qualified to diagnose ailments nor recognize communicable diseases and to take measures to control them. He is therefore an opponent to the department of health.

Wherefore, it seems to me it would be inconsistent for the legislature to appropriate, as it will do, money for the state board of health, which board is trying to eradicate communicable diseases, and at the same time legalize the practice of a cult which does not believe in the germ theory of a disease but does teach and believe that such diseases as scarlet fever, etc., are due to a distracted vertebra and the method to prevent and cure such disease is to see that everybody has a normal spine.—*Jour. A. M. A.*, April 4, 1931.

VOCATIONAL GUIDANCE

The expert had established quite a reputation for his ability to fit people into their right employment niches. One day a husky young Greek called upon him.

"What is your name?" inquired the vocational expert.

"Gus Poppapopopulous," replied the Greek.

"Get a job selling motorcycles," advised the expert, promptly.

Original Articles

ACUTE PANCREATITIS*

PERCY E. HOPKINS, M. D.

CHICAGO

It is usually held that acute pancreatitis is a rare condition and that it is extremely difficult to recognize. This is not necessarily true and a resume of the condition laying stress on the less violent processes with the more recent concept of their treatment may be of value in producing more accurate diagnoses and lowering the present high mortality (50-75%).

Etiology. Embolic processes in the pancreas being very unusual, they are mentioned merely as possibilities as are the other acute pancreatic involvements occurring as manifestations of generalized infections, such as mumps, scarlet fever and typhoid.

The pancreas becomes affected by the injury sustained as a result of bile or intestinal content reaching it through the ducts or possibly an infection carried to it through the lymphatics from the biliary tract. A spasm of the sphincter of Odi as described by Archibald¹ or a plugging of the ampulla of Vater by a stone may cause bile to be forced into the pancreas. This condition has been proven by Cameron and Noble² to be an anatomic possibility in about 65 per cent. of persons at autopsy.

Experimentally liver bile, or bile free from mucin, produced pancreatitis more often. It is also held that it is possible for the duodenal contents to reach the pancreas through the duct of Santorini inasmuch as its opening is not controlled by a sphincter.

The theory of Maugeret has many staunch adherents who agree that acute pancreatitis is a lymphatic infection from the liver and bile ducts which is carried to the pancreas by the periductal lymphatics although recent work by Kodama³ and also by Archibald⁴ has failed to show any such lymphatic connection to the pancreatic substance proper.

Gall stones and biliary tract infection have been noted in 50 per cent. or more of the recorded cases, however, and it is probable that

several factors underlie the etiology and that the acute hemorrhagic type with more or less massive necrosis is produced by some chemical action with the production of a rapid pulse poison. (Muller⁵).

Suppurative pancreatitis may be present initially with the formation of an abscess with a milder clinical course.

Pathology. The organ usually is enlarged to 2 or 3 times its normal size; hard, edematous and shows a marbled surface on section. Dependent on the degree of hemorrhage, the surface shows irregular yellow, red or almost black areas. The hemorrhage may be slight or absent and then the surface shows a dull white or yellow, dotted with areas of fat necrosis.

One may find the whole gland or a part of it extruded as a slough in an abscess cavity which may also contain bloody fluid such as was encountered by the author in a recent case.

Another group of cases according to Archibald show moderate enlargement and hardness often confined to the head with edema, leucocytic infiltration areas of aseptic necrosis, thickening of the stroma and eventually a marked inter and intralobular fibrosis. These cases probably belong to the subacute group and are mentioned because some of them are not operated on until these changes have occurred.

The very characteristic areas of fat necrosis which are due to the action of lipase splitting the fatty acids and glycerine and then being saponified occurring in the mesenteric and omental fat principally but almost anywhere else in the body fat, frequently cause the recognition of a pancreatic involvement that might otherwise be overlooked. These areas are eventually reabsorbed if the outcome is favorable.

Opie and Meakins⁶ proved several years ago that the fundamental lesion is a necrosis of the cells in the interior of the lobule, spreading to the periphery; the lesions of inflammation being secondary and due to a less irritating action such as may occur in the peripheral cells and the stroma because of the greater dilution of the irritating fluid in this region.

As a result of the autodigestion of portions of pancreatic substance, split products of protein digestion are thrown into the circulation and it

*Read before Section on Surgery, Eighty-first Annual Meeting Illinois State Medical Society, East St. Louis, May 6, 1931.

is thought this may be the cause of some of the rapidly fatal endings.

Symptoms. If one accepts Archibald's⁷ classification of acute pancreatitis; 1. Hyperacute pancreatic necrosis, 2. Acute pancreatic necrosis, 3. Subacute pancreatitis and 4. Acute pancreatic edema; the symptoms will include those occurring in the pancreas as a result of the interference with its physiological function; those due to obstruction of the common bile duct, the peritoneal signs; and the symptoms due to an interference with the sympathetic nervous system. This is probably the most tenable grouping offered.

1. Hyperacute pancreatic necrosis. This condition is almost uniformly fatal, death being due to a true neurogenic shock produced by pressure of hemorrhage and exudate on the solar plexus or as a result of absorption of histamin being produced by proteolytic action in the pancreas. The pain is violent; being usually not amenable to morphine; is always in the epigastrium going through to the back; vomiting is quite constantly and persistently present; the patient rapidly goes into shock and usually dies either within the first few hours or within the first two days.

2. Acute pancreatic necrosis. This condition represents an involvement less severe than the hyperacute but the patient may also die within a few days as a result of toxic absorption or because of other later complications. The patient is not so violently shocked and the symptoms of jaundice, peritonitis or ileus may follow within the first 24 or 48 hours. The location of the pain is the same as in the more severe type. Frequently this type of individual is operated on with a diagnosis of acute intestinal obstruction or acute generalized peritonitis. Usually some rigidity and frequently the evidence of fluid in the peritoneal cavity are present. These two types of cases occasionally show definite pallor or even a cyanosis which is not constantly present but which when present is considered quite pathognomonic. Jaundice may or may not be present in this type.

A. K., white male, 39 years of age, with a history of cholecystectomy, 6 years previously, and with a history of occasional, indefinite indigestion, taken violently ill during the night with pain in the epigastrium, sharp and boring in character, going through to the back, accompanied by marked vomiting and considerable

prostration, seen about 8 hours after onset of the attack. Patient quite restless, having an appearance of pallor and being that of an individual suffering from considerable pain with quite marked abdominal distention with location of tenderness quite generalized in the upper abdomen. Temperature 101, pulse 140, white blood count 19,000, urinary findings negative. Enemas gave but temporary relief with no appreciable effect on distention. Diagnosis of acute intestinal obstruction was made and laparotomy recommended. Operated on 14 hours after onset of attack with typical picture of bloody fluid in peritoneal cavity, multiple areas of fat necrosis and no mechanical intestinal obstruction. Pancreas quite large and edematous, particularly the head. Gastro-colic ligament split. Pancreas markedly swollen, dusky in hue but with no necrotic areas at this time. Cigarette drains down to the region of pancreas, common duct not visualized. Patient made uneventful recovery.

3. Subacute pancreatitis. The symptoms are definitely milder, being those of a sudden severe epigastric pain accompanied by vomiting and some prostration with recovery being the rule but with probably in many instances, if operative interference is not made, a conversion into a chronic type of pancreatitis.

Mrs. S., aged 28 years, admitted to the hospital per ambulance, with a diagnosis of acute appendicitis. Patient gave a history of having had occasional attacks of indigestion accompanied by epigastric pain, one, which three months previously, had been sufficiently severe to cause her to go to bed and have medical care. This attack began 4 days previously with severe epigastric pain, vomiting and considerable prostration. Constipation was present. Patient not appreciably distended but had a definite mass in the epigastrium which was very tender to the touch. Some abdominal rigidity was present, urinary findings were negative, white blood count was 21,000. Diagnosis of acute pancreatitis was made. Patient was still having severe epigastric pain—patient operated on under spinal anesthesia. Gastro-colic ligament was split and a large dusky pancreas protruded quite close to the abdominal wall. Capsule of the pancreas was opened in one of the more hemorrhagic areas and a considerable amount of bloody fluid with some slough escaped. The pancreas having previously been sutured to the parietal peritoneum, a rubber tube was inserted into this opening. This patient also made an uneventful recovery.

4. Pancreatic edema or mild acute pancreatitis. This is the condition upon which it is desired to lay stress. This condition probably occurs more frequently than is commonly recognized and is due to an acute edema of the pancreas produced by the influx of normal bile into the pancreas with a resultant congestion, edema and probably some small hemorrhages, all of

which disappear within a few days. This was observed by Archibald in 1913 and confirmed later by Zoepffel⁸ in 1922. These individuals have sudden severe definitely localized attacks of sharp agonizing epigastric pain, quite frequently going through to the back just to the left of the midline and being accompanied by nausea, vomiting, pallor and possibly some slight prostration. These attacks usually disappear within a few hours but may leave the quite typical epigastric tenderness for several days. Epigastric tenderness is rather a constant finding in pancreatitis if the pain is not so violent as to preclude its recognition by the patient. Jaundice may be present quite early due to pressure on the common duct. Probably many of these cases are diagnosed as biliary colic, peptic ulcer pain or perforation, or acute indigestion and it might be difficult to determine which cases are those of mild pancreatitis. The relatively short duration of the pain, however, its definite and typical location; its rather prompt response to an opiate (after other things have been excluded from the diagnosis), the localized tenderness with its persistence; and the absence of any other history such as gall stone colic or peptic ulcers plus the subsequent picture of the attack allow one to diagnose this condition as that of a mild pancreatitis.

Mrs. A., aged 48 years, who had previously had bilateral pyelonephrotomies, was seen at 8:30 P. M., 4-1-31. She gave a history of having occasional mild attacks of indigestion, with no definite regularity or relationship to meal time. This attack began with pain in the epigastrium, nausea and vomiting, violent back ache and considerable weakness—about 11 A. M. Patient not distended, pulse 130, temperature 100, and respiration 30, still having considerable epigastric pain and vomiting, very tender in epigastrium. White blood count 18,000, urine negative, abdominal examination otherwise negative. Presumably this patient had an acute pancreatic edema which was quite mild in character. A half grain of morphine was given, per hypo. The pain had entirely disappeared the next day but tenderness still persisted and was present to some degree on the 4th day following the acute attack. This patient was not operated on but further work will be done in regard to the biliary tract.

The various attempts to determine pancreatic function by estimating the ferments in its external secretion have not met with uniform success as marked variations have been recorded in apparently normal individuals and therefore the

application of these functional tests in pancreatitis is not to be recommended.

The study of blood amylase with the viscosimeter applies a new principle and offers some real aid to the determination of pancreatic function with findings that have in many instances been verified at operation or autopsy. The determination of blood amylase is based on the rate of diminution of the viscosity of a starch solution as described by Elman and McCaughan⁹ in 1927. The breaking down of starch to glucose being accompanied by the hydrolysis of larger to smaller molecules with a reduction of viscosity, an arbitrary amount of change is selected and the amount of amylase then becomes a function of the time required to effect the change.

In cases of acute pancreatitis there is an increase in amylase due to the digestion of the walls and of the ducts and an escape of ferments into the blood and surrounding tissues. In the chronic cases there is a decrease in amylase due to the atrophy of the acini. Graham and Associates¹⁰ made a clinical study of this test recently and conclude that it has undoubted clinical value. This test warrants a much wider use and investigation in that it may provide a very great help in diagnosing the various types of pancreatic involvement.

Ordinary laboratory measures offer little aid in the diagnosis excepting there is quite constantly and early a fairly high leucocytosis present. Glycosuria is about as commonly absent.

Diagnosis. The hyperacute cases should offer little difficulty in diagnosis and as practically all of them die whether or not they are operated on, they will not be discussed here.

The milder types which are in a majority of instances accompanied by biliary disease often require considerable thought for their recognition. Sometimes no other diagnosis than that of an acute surgical abdomen is possible but this is not desirable particularly in some instances as will be brought out in the discussion of treatment. The abdominal signs are not proportionate to the symptoms. In acute cholecystitis the pain is quite often referred to the right shoulder blade, in pancreatitis it may occur to the right of the midline but very frequently is on the left side with a tendency to go straight through to the back. In many instances it will be possible

to localize the tenderness to the limits of the pancreas. The patient who has had an ulcer perforate in many instances assumes a position that is most comfortable and resents a suggested change of position. The individual who has a biliary colic or a kidney colic is usually writhing with pain while one who has an acute pancreatic involvement undoubtedly has the most agonizing pain of the three. He usually is not afraid to move and seems to be more quiet than the individual with the colic. The differentiation from high intestinal obstruction occasionally offers difficulty and it may occur as a part of the picture, but the localized tenderness in pancreatitis in contrast to the diffuse tenderness in intestinal obstruction with the marked reduction in blood chlorides may be of aid in distinguishing between the two.

Acute mesenteric thrombosis is usually accompanied promptly by the appearance of blood in the stools with a diffuse abdominal pain.

Treatment. Unless diffuse peritonitis or an abscess forms it is now held that surgery is best deferred until after a few days have elapsed or until the acute symptoms have subsided, for according to Eliason,¹¹ Mikkelsen reports the recovery of 50 consecutive cases treated non-surgically or with a deferred surgical operation compared to a mortality of 66 per cent. following immediate operation.

If the pancreas contains gangrenous areas or abscess pockets they had best be drained through the gastrico-colic ligament.

If the pancreas is swollen and edematous and there is much exudate and fat necrosis, drains down to the region of the pancreas constitute all the necessary surgery.

The question of drainage of the biliary ducts or gall bladder is always a serious problem and in general it is held that too much should not be attempted in this regard in the more acute cases. Drainage of the gall bladder is much more readily done than is drainage of the common duct but occasionally it will be necessary to drain the common duct because of obstruction of the cystic duct or because of a stone in the ampulla of Vater. It is advantageous to defer such a procedure if possible until the acute attack has somewhat subsided.

Removal of the gall bladder can hardly be

justified during the acute process without drainage of the common duct, even though the cystic duct be occluded. Any drainage of the biliary passages that is established should be continued for a sufficiently long period to allow the pancreatic edema to subside. This may take many weeks rather than days.

In summarizing the problem of treatment it is difficult to see the validity of early operation, inasmuch as the patients die as a result of absorption from destroyed tissue and the extent of the destruction of tissue is probably quite early determined definitely and is fixed while later operations to open abscesses, remove sloughs and prevent bile from getting into the pancreas, certainly constitute good surgery.

CONCLUSIONS

1. Acute pancreatitis constitutes a condition which may vary in severity from that of an exceedingly rapidly fatal outcome to that of a much more common milder grade.
2. The diagnosis, especially with the newer blood amylase viscosity determination will become more frequent and accurate.
3. Biliary tract involvement is associated in a majority of cases.
4. Deferred surgical intervention probably offers the greater hope in the light of present knowledge.
5. Prophylactically, the surgical care of biliary tract involvement may lessen the incidence of acute pancreatitis.

800 W. 78th St.

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DISCUSSION

Dr. M. E. Brennan, East St. Louis: This is a very important subject because the pancreas is the most important digestive organ in the body and the most evasive.

Opie produced acute pancreatitis by injecting bile into the pancreatic duct. His bacteriological investigation convinced him that acute pancreatitis was probably not caused by infection. At autopsy he found acute pancreatitis caused by a stone in the ampule of Vater large enough to occlude the opening into the duodenum but small enough to allow the passage of bile into the pancreatic duct. From this he concluded that the etiology of acute pancreatitis was quite simple and that the cause of the disease is cholelithiasis.

Deaver admitted that acute pancreatitis could be produced by stones diverting the bile into the pancreatic duct but said that it seldom did. He attributed the cause to infection secondary to the bile tract, duodenum, and transverse colon particularly, but also to infections of the appendix, pelvic organs, or from even more remote infection through lymphatic extension and possibly from blood stream infections.

Opie's deductions were logical but Deaver was more nearly right. Regardless of the possible mode at least 65 or 70 per cent of the cases of acute pancreatitis are associated with biliary disease.

Acute pancreatitis was classified by Fitz as acute hemorrhagic, gangrenous and suppurative. This is a pathological classification and helps but little in clinical diagnosis. Deaver classified the disease as ultra acute, acute and subacute. This is a classification of degree of symptoms rather than differentiation of symptoms and gives little aid in clinical diagnosis.

Functional tests for the liver and kidneys have proven so fruitful in clinical diagnosis of diseases of these organs that many attempts have been made to elaborate functional tests for the pancreas. Most of these tests have been fruitless, however, it seems that recently some functional tests of value are being worked out.

Dr. Hopkins spoke to you of a functional test. At Barnes Hospital in St. Louis they have been working on a test that is reported by Dr. Graham as quite accurate. It is a determination of the amylase in the blood. I am not acquainted with the laboratory work and can not get a clear understanding of it from the description as given by Dr. Graham. If we are to be any more accurate in our clinical diagnosis it seems to me that it will have to be obtained by functional tests.

Preventing the disease by early attention to the biliary tract seems to be the most logical way to handle it. When acute pancreatitis exists it is a tragedy and must be handled by incision and free drainage just as we have been handling it for years. I know of no improvement upon the operative technic. When pancreatic secretion has free drainage it seems but slightly

more irritating than bile. When it is confined it is very destructive.

Dr. J. H. Bacon, Peoria: I would like to speak of one of this type of case, following injury in a middle aged man. Pain followed immediately after the trauma which subsided so that he continued his work for the rest of the day, unable to work the next day and his symptoms gradually increased and became grave the fourth day, with rigid abdomen, vomiting and jaundice. On opening the abdomen, free bile was found, with gangrene of the tip of the gall bladder but it was not leaking. The entire common duct was gangrenous and was ruptured. Drainage of gall bladder instituted. He did well but had permanent biliary fistula. About four months later developed acute obstruction of the bowels and a gastro-entostomy was done. Large hard mass in head of pancreas and dense adhesions. Six weeks later jaundice developed and bile flow stopped. Fistula explored under local anesthesia but no obstruction found. Death ensued shortly thereafter. At autopsy a large abscess was found in head of the pancreas and multiple abscesses in the liver. Might other treatment have changed the outcome?

ROENTGENOTHERAPY OF CONDITIONS OTHER THAN MALIGNANCY*

I. S. TROSTLER, M.D., F.A.C.R., F.A.C.P.,
CHICAGO

It must be said of the early workers in roentgenotherapy, that with the crude apparatus, unreliable x-ray tubes, various sorts of inefficient generating plants and little or no means of measuring the output of current, intensity of radiation or amount of absorption of the therapeutic agent, it is remarkable that so much was accomplished. We had to learn the dosage that was necessary to produce the desired effects by clinical experience, and apply that dosage by guess and by gosh. However, after the passage of a little more than thirty six years from the date of Röntgen's first paper, thanks to the intensive studies of highly trained physicists, electrical engineers and competent medical clinicians, all this has been changed. In fact we are now, with our standardized apparatus, efficient x-ray tubes, standard filters, calibrated measuring instruments, etc., able to measure our dosage and determine what we desire to apply as nearly as accurately as can the man who weighs his remedial agent or measures it in a graduate.

We have heard much of the treatment of malignant disease by means of the roentgen rays,

*Read before Section on Radiology of Illinois State Medical Society, May 7, 1931, at East St. Louis.

and not so much of non-malignant disease, so that when I was invited to present a paper here I decided to discuss roentgenotherapy of conditions other than malignancy.

Let us start with non-malignant uterine conditions. The application of the roentgen rays to benign disease of the female pelvic organs is not by any means new. As early as 1904 Foveau de Corvelles treated uterine fibroids by this method, while Longfeller in 1904, reported changes in the menstrual functions after roentgen treatment, and in 1909 Albers-Schönberg applied a definite and systemic technique to benign tumors of the uterus.

Because of the rapid strides that radiology has made during its short life and the large amount of definite and conclusive beneficial results in the large number of carefully reported cases, we have at this time no hesitancy in saying that practically all uncomplicated uterine fibromyomata should be treated and cured by roentgenotherapy. In a general way, the most favorable field for this therapy is in women over thirty-six years of age, whose fibromyomatous uteri do not extend above the umbilical line. The more uniform the uterine enlargement, the more favorable are they for this therapy. Interstitial fibroids usually give us the best results; but submucous, subserous and mixed types yield good results. Because the mixed type constitute the majority of cases, we see and consequently treat more of them.

While the literature is replete with explanations of what is accomplished in these cases, I will presume to briefly try and delineate some of my ideas of what is believed to be important to be known by all physicians, regarding how roentgenotherapy affects uterine fibroids.

First and foremost, hemorrhage, which is usually what brings these patients to us, and is the most important symptom in the submucous type, is promptly checked in over 95 per cent of all hemorrhagic cases. After the checking of the hemorrhage, the tumor usually begins to reduce in size, and the more myomatous tissue there is present the faster is this reduction while the more fibrous tissue there is present in the tumor, the slower will be the reduction in the size of the tumor.

It is a generally accepted belief that the entire results obtained are due to the action of the rays upon the ovaries; but this is far from

being entirely proven. Dr. George Gelhorn of St. Louis,¹ in 1921, reported two cases contradicting this theory and I have three cases in my own practice, which go to disprove it.

Mrs. A. had a double salpingo-oöthectomy in 1917 when she was 33 years old. In 1920 she was referred to me with a large smooth fibromyomatous uterus, reaching to within three inches of her umbilicus. Roentgen treatments caused the uterus to recede behind the symphysis-pubes. Examination of this lady in December, 1928, showed that her uterus was but little larger than a well involuted multiparous uterus.

Mrs. B. had a double oöthectomy in 1916 at the age of 35. In 1921 at the age of 40, she had a fibromyomatous uterus reaching almost to the umbilicus. I treated her in the latter part of 1921 and early 1922, with prompt and most satisfactory reduction in the size of the tumor and uterus. I examined her in 1927 and found her uterus slightly larger than a normal multiparous uterus and she was enjoying splendid health.

Mrs. C. had a double salpingo-oöthectomy in 1915 at the age of 34 and stopped menstruating shortly thereafter. In 1924 she began having irregular hemorrhages. I was called in consultation to see her and made a diagnosis of uterine tumor. After a careful curettement and finding no evidence of malignancy, I recommended hysterectomy; but the patient positively refused to be operated on. This uterus was about the size of a large grape fruit and roentgenotherapy promptly reduced its size and stopped the hemorrhage. Examination in August of 1930 showed her uterus about normal in size and patient declared that she was in splendid health.

In these three cases, as well as the two cited by Gelhorn, the effect must have been upon the uteri and tumor tissue *entirely*, as in all five both ovaries had been removed and in my three cases menstruation had stopped before I saw them.

Further evidence that the results are not entirely due to the effect on the ovaries has been reported by others, from Finland and from Germany, regarding the increased coagulability of the blood, etc.

Men of world renown and high repute and standing have written so much upon this subject, that I will go no farther than to say that in our opinion, *roentgenotherapy is the treatment par excellence for uterine fibromyomata* unless it is contraindicated, because

1. It is safer for the patient than is surgery.
2. It is pleasanter for the patient than is surgery.
3. It is unnecessary for the patient to go to bed or to enter hospital.

1. Gelhorn, George, Journal A. M. A., Jan. 28, 1922.

4. It is unnecessary for patient to lose any time.

5. There is no surgical operation with its risks and fears.

6. There is no anesthesia with its risks and fears.

7. There is less postoperative morbidity.

8. There is no mortality.

9. The percentage of cures, in properly selected cases is as great as with any other method of therapy.

Uterine Hemorrhage. In uterine hemorrhage from any cause except inflammatory pelvic disease (and some well informed gynecologists of high standing do not now except inflammatory disease), roentgenotherapy should be the first remedy to be applied, if available.

The menopause need not be produced, if it is not desired, and if the patient is a young woman, only a short period of amenorrhoea—if any—need result. If the patient is near the climacteric, the menopause will be brought on painlessly, gradually and with the minimum of discomfort for the patient. This is accomplished by masking off the ovaries so that they receive only the secondary radiation from the tube. Menorrhagia, metrorrhagia and the uterine hemorrhage of subinvolution yield splendid results to properly applied radiation, to the extent that all other methods of treatment should be withheld until roentgen methods fail.

Dysmenorrhea. There are so many women nowadays who suffer the tortures of the damned every twenty eight days, and there are so many questionable remedies for their relief, that some few venturesome radiologists, myself among the number, attempted to try radiation for the relief of this torture. From a small beginning, and by careful and steady advances, methods and technique have been developed whereby we may give such marked and gratifying relief in many of the most distressing cases. In women past the 30th year of life, in which the dysmenorrhea has been intractable and refractory and has resisted all other measures of relief, it has become our practice to apply enough radiation to produce relief even to the point of producing a complete amenorrhoea, if necessary; and up to this time we have yet to regret this action. The satisfaction of being able to give relief to this in-

capacitating agony, stimulates us to continue this practice as long as we have no better means to suppress the pain. References to this subject in the literature are numerous, particularly during the last few years.

Much more might be said regarding the use of roentgenotherapy in gynecology, particularly in relation to overcoming Neisserian infection, but we must proceed and take up your time with a few minutes on an old time favorite subject of mine and yours too, namely

Thyrotoxicosis. I like the term thyrotoxicosis, because it includes the true exophthalmic goiter, and the overactive adenomatous thyroid.

Any physician who reads the medical literature at all has seen so much of this subject, that I venture that most all of you think of roentgenology whenever you see a toxic thyroid patient. If you do not, you should.

Roentgenotherapy has been used for nearly thirty-five years and those who have been using it for the numerous and various conditions and diseases and have learned how best to apply it, are getting as constant and consistent benefits and in as high a percentage of cases in thyrotoxicosis as is obtained with any other method of treatment.

In 1922 I presented a paper on this subject before this society, and at that time stated that "X-ray therapy is the treatment of choice for hyperthyroidism for the following reasons:

1. Because no harm can result and past experience proves that the method has cured and relieved a higher percentage of those treated than has any other and all other methods.

2. Because there is no operative risk.

3. Because there is no confinement in bed in ambulant cases.

4. Because there is no fear of operation by patient, family, friends or physician.

5. Because there is as great a likelihood of cure and as little likelihood of recurrence as there is by any other method of treatment; and if recurrence does occur, the same means and methods are available as before.

6. There is no scar on the neck or the mind of the patient.

7. The thymus can be treated at the same time.

This Is Important.

With nine years of additional experience, I am glad to say that I have nothing to retract and considerable to add to these arguments.

My records of thyrotoxicosis cases treated up to September 1, 1930, are:

Number of patients treated.....	561
Number of patients clinically cured.....	390 or 69.52%
Number of patients clinically improved.....	126 or 22.46%
Number of patients rendered operable and operated on	20 or 3.56%
Number of patients unimproved.....	25 or 4.46%

Of the foregoing, there were 37 who had been operated on before I treated them, all of whom had definite thymus shadows, and all of whom were clinically cured by the radiation. Four of these had had two operations on the thyroid gland.

The oldest patient in my series of 561 cases treated was 68 years old and she is still alive after seven years. The youngest patient treated was ten. There were among these, three sisters, 20, 22, and 24 years old respectively.

The shortest period covered by the treatment to effect a clinical cure was 22 days (two series). The longest time consumed was 13 months, and the average time to affect a clinical cure in the 390 cases was three and one-half months.

Among the 561 cases were six (6) physicians—five of whom were clinically cured and one rendered operable and cured by the operation; eleven were physician's wives, all of whom were clinically cured; nine were physician's daughters—all clinically cured.

My conclusions from this series are that roentgenotherapy offers results that are equal to the best offered by any other method of treatment, even in the most expert hands.

The primary mortality is less than that of any other method of treatment, being none at all. The morbidity is far less than that of any other method.

Because of the lack of need of hospitalization in all ambulant cases with the consequent absence of hospital and nursing expenses, this method offers a decided economic saving over any other.

Thymus. Thymic hyperplasia, which so frequently accompanies thyrotoxicosis but which I have scarcely mentioned in discussing the foregoing subject, is acknowledgedly best treated by means of the roentgen rays.

In pathological enlargement of the thymus gland in infants and children no method yields as prompt and satisfactory results as the application of the roentgen rays.

At the last meeting of this Section, in Joliet,

I had the privilege of discussing a fine paper on this subject, which was presented by our good friend Wilbur H. Gilmore (published in the Illinois Medical Journal for August, 1930). At that time I said in part, "We should always be on the lookout for enlarged thymus in infants, particularly in those born prematurely and those apparently poorly nourished. * * * Slight enlargements frequently produce marked symptoms, etc, etc."

In addition to a considerable sized series of successfully treated cases of this condition in children, I have had forty-seven cases of enlarged thymus in adults to treat with roentgenotherapy, and in every case relief has resulted. Many of these had asthmatic symptoms while some had various other findings. Three of these came to me with a diagnosis of aortic aneurysms from roentgenograms made by physicians who were not experienced in interpreting the films and read them wrongly. Two of these were alleged to have been confirmed by fluoroscopic findings of expansile pulsation, but after the treatment showed no evidence of aneurism.

DERMATOLOGY

I could spend hours discussing the place roentgenotherapy has in the treatment of diseases of the skin without beginning to exhaust the subject. Because of lack of time I will merely mention a few of the most outstanding examples among the skin diseases benefited and cured by our therapy. George Miller MacKee, in his "X-Rays and Radium in the Treatment of Diseases of the Skin" enumerates more than eighty diseases of the skin in which the x-rays are beneficial.

Eczema, particularly of the indurated and more chronic forms yields splendid results and all modern writers on diseases of the skin mention the x-rays as the main and most valuable means of treatment.

Acne vulgaris if chronic and of long standing is usually much benefited by x-ray therapy.

Callouses and corns are quickly and surely cured and if the cause is removed do not recur.

Carbuncle when early recognized is frequently aborted, and if advanced, the pain is promptly relieved and softening, evacuation and healing are markedly hastened, while the resulting scars are decidedly less conspicuous in irradiated cases. I speak from personal experience in this.

Furunculosis is also favorably and satisfactorily influenced.

Blastomycosis and *Streptothricosis* and the various types of *tinea* yield quickly to roentgen radiation. A case of blastomycetic dermatitis of twenty years standing, that had been subjected to numerous and various methods of treatment by such celebrated clinicians as J. B. Murphy, Nicholas Senn, M. L. Harris, F. Rettig, E. E. Vaughan and others, was cleared up with a very few applications of the roentgen rays in 1921 and has remained well since.

Another case of the same condition which occurred in an eleven year old girl, had been present for over six years and had resisted the efforts of a dozen physicians, none of whom had thought of the x-rays of course, healed and disappeared after three applications of our most versatile remedy. A case under treatment at this time in a twelve year old girl has nearly healed after three applications. This has been on this child since early infancy.

Keloid is easily softened and caused to disappear in 95 per cent of all cases.

Hyperhydrosis and *Bromhydrosis* (the causes of the famous B. O.) can usually be cured to stay cured by a few applications of the x-rays.

Pruritis of the various anatomical locations, particularly of the anal and vulvar regions, yields most satisfactory results and gratifies both referring physicians and patients, by the comfort and ease produced in these often nearly frantic patients.

Leukoplakia, that forerunner of malignancy, can usually be caused to entirely disappear never to return by radiation.

Verucca or warts usually melt away quickly and *condylomata* of the vulvar and anal regions are usually easy to eradicate.

Naevi of the pigmented and hairy types are as a rule easily removed.

Lichen, *Prurigo* and similar conditions usually disappear after light applications of the x-rays.

Psoriasis, which gives us all so much trouble to eliminate has been successfully treated with roentgenotherapy. When persisted in and intelligently studied, this stubborn and tormenting disease yields enough cases apparently cured and markedly relieved to justify a thorough trial.

Lupus vulgaris, that wolf of diseases, while one of the stubbornest of all the diseases of the skin, generally yields better results under the

x-rays than under any other therapeutic method. The last eleven cases under my care were completely cured, although some of them were of long standing.

In addition to the skin diseases named—which were given without reference to their classification, pathology or frequency, all skin conditions characterized by itching, induration and thickening, react well to the depressing and softening effects of the roentgen rays.

OPHTHALMOLOGY

There are several diseases of the eye which give definite indications for the employment of roentgenotherapy. Among these are:

Interstitial keratitis, which is a chronic disease of the cornea, with deposits which reduce the vision. This is frequently benefited by carefully applied radiation.

Trichiasis has been markedly helped by producing epilation of the eye-lashes. This is accomplished by carefully shielding the eye and treating through slotted lead fenestra, exposing only the region where the effect is desired.

Marginal blepharitis can be treated in a similar manner to the last named disease and frequently gives most pleasing results. It is a most intractable disease.

Excessive lachrimation can be reduced to any desired degree, by exposing the tear glands. The x-rays tend to dry up glandular secretion.

Vernal Conjunctivitis is another stubborn disease of the eyes that can frequently be relieved by application of the x-rays. Hubeny reported cases several years ago and I have had a few with satisfying end results.

Trachoma is being treated more and more in Europe by means of the x-rays. It is stated that many cases are cured and none are injured. The few that I have tried were cured.

OTOLARYNGOLOGY

Eustachian catarrh and *catarrhal deafness* are frequently much benefited by properly directed radiation.

Otosclerosis which is practically intractable by any other means, is occasionally much benefited. The roaring and tinnitus are helped in enough cases to justify a thorough trial in every case.

BONE AND JOINT DISEASES

Chronic osteomyelitis has been benefited in many instances by roentgenization.

Arthritis deformans has received much publicity and notice in the German and Austrian medical literature, as being markedly benefited by roentgenotherapy. A small series treated by me has given surprisingly good results in every case. The relief from pain is prompt and reduction of enlargements and resumption of joint function is startling. In some of the cases the resorption of deposits is sufficient to show in roentgenograms. These cases are always so distressing, that it is a real pleasure to give some relief and anything which promises some remission of the suffering is certainly to be welcomed.

Chronic sinovitis and *arthritis* offer conditions in which the roentgen rays with their pain relieving effect will be found most gratifying; the stiffness and enlargements of the joints are frequently so markedly reduced that we wonder if we may believe our senses. European and American medical writers report benefits in the various types of *acute* and *chronic polyarthritis*.

Tenosinovitis and *ganglion* may usually be completely absorbed by the application of roentgenotherapy.

Surgical tuberculosis of the bones and joints present some of the conditions in which we have most gratifying results. It is remarkable how sinuses close and heal, mineral salts are repositied in the decalcified bones, joints frequently resume their functions and other functional and physiological improvement is produced by roentgenization.

Ununited fractures—the so-called fibrous unions—may frequently be caused to take on calcium and heal, after the application of the x-rays. This is not in the nature of stimulation, as the *X-Rays Never Stimulate*, but the effect described has been repeatedly demonstrated.

GLAND CONDITIONS

Tuberculous adenitis stands out as one of the conditions most amenable to roentgenotherapy. Most intractable to ordinary therapeutic measures entailing long periods of invalidism, numerous and oft repeated dressings and usually terminating with ugly and defacing scars, roentgenotherapy with its minimization of all these, offers much that is desirable. If this treatment is begun before the glands have broken down and liquefaction, suppuration and mixed infection are not yet present, the gland tissue is soon atrophied and encapsulated. If the glands are

draining and sinuses are present, healing and closure of the sinuses is accelerated and the end result is in many ways improved and enhanced.

In simple *inflammatory* or *infectious adenitis* a single application of the roentgen rays usually suffices to effect a cure.

TONSILS

The tonsil question, as regards roentgenotherapy, has stirred up considerable discussion, so that I hesitate to say much about it. I have several times publicly stated and still firmly believe that diseased tonsils should be removed whenever it is safe and practicable. If however for good and sufficient reasons operative removal is refused or undesirable, I undertake to treat them with the x-rays.

In my series of tonsil cases I have treated seven physicians, nine physicians' wives (four of whose husbands are doing tonsil surgery), nine physicians' children (two of whose fathers are otolaryngologists) and a considerable number of trained nurses and surgical technicians.

I believe that the results obtained in properly selected cases justify the method, except when abscess is present. When only a lymphoid enlargement is present, prompt reduction in size ensues.

UROLOGY

In *prostatic hypertrophy* where the glandular tissue predominates, the size of the gland may be markedly diminished and the consequent obstruction relieved, along with other urinary symptoms, thus rendering the always serious prostatectomy unnecessary, or at least postponing it for a time. Splendid results in properly selected cases are numerous in the records of nearly all experienced roentgenotherapists. I have had physician patients come for a thousand miles for treatment of their prostates.

Tuberculosis of the urinary bladder is always a serious condition, which fortunately, however, is not very common. A few cases have been treated with the roentgen rays with marked benefit and satisfaction to the patients and referring physicians, and we feel justified in recommending a trial in even the most serious cases with this disease. The great advantage of our treatment is that the irradiation may be applied to the entire urinary tract if desired, and to the deeper structures in and about the bladder and

ureters, as against the superficial effects of drugs and topical applications.

Papillomata of the bladder are affected much in the same way as are papillomata elsewhere and particularly if they are multiple. If I had that condition myself I would select x-ray therapy for myself.

NEUROLOGY

Neuritis of the various sorts and locations is given much relief by raying either the spinal roots and ganglia or the offending local region. I have used this upon my wife and myself, one application giving prompt and lasting relief within thirty hours in brachial neuritis.

Sciatic and occipital neuralgias are usually relieved quickly, while *intercostal neuralgia* has yielded to single applications in fourteen cases.

In *thromboangietis obliterans* where the pain is so frequently of the most excruciating and tormenting character and the ulcers will not heal, we have seen prompt relief from the pain, healing of ulcers and apparent arrest of the process in five cases.

ASTHMA AND BRONCHITIS

As far back as April 23, 1906, Theodor Schilling reported, at the 23rd Congress of Internal Medicine in Munich, treating exudative bronchitis with severe asthma by roentgenotherapy with brilliant results.

In 1907 and 1908 Immelmann reported similarly at two medical meetings, while Bergman, Levy-Dorn, von Jaksh, Eckstein, Gottschalk, Groedel, Bolshakova and others in Europe and Gerber and others in this country have reported satisfactory results. It has been my privilege to have treated three physicians, all of whom have been greatly benefited. This method deserves more notice and application than it apparently receives.

UNRESOLVED PNEUMONIA

Records and reports as far back as 1905, by that master clinician, John H. Musser, along with numerous others of more recent date, strongly indicate the benefits resulting from x-ray treatment in unresolved pneumonia.

SUMMARY

I have purposely refrained from naming quite a large number of diseases and conditions where there is some question as to the efficacy of the

method and which I consider as clinical experiments. In many of these to me questionable conditions our European confreres are daily applying the roentgen rays and the medical literature is full of their papers and presentations. The medical literature from Germany, Austria, Hungary, Czecho-Slovakia, France, Italy, Scandinavia and Russia is replete with papers and entire volumes devoted to the methods of applying the roentgen rays in many diseases and conditions not named here.

While much of the foregoing is a mere scanning of the subject, because of its wide and varied possibilities and the multiplicities of the conditions and diseases mentioned, I am sure that you will realize that roentgenotherapy in non-malignant diseases has much to offer to the afflicted and to the physicians in whose care these patients are entrusted. I feel that I have reminded you that the roentgen rays are applicable to the treatment of a very wide range of pathological conditions.

But please do not presuppose from the foregoing that we claim to have a panacea for all human ills. It is far from our intention to try to convince you that we have a cure-all. Quite the contrary, we desire that you grant that we base our claims on logical, sound and sensible reasoning from cause to effect, and we are most anxious to have you give us the opportunity to prove it to you.

We claim and are prepared to prove three things in regard to roentgenotherapy in benign diseases, particularly those mentioned in this paper, and if you will grant these three things we will be satisfied. Our contention rests upon the following three points and upon them alone:

1. *The roentgen rays produce sedation, they depress pain, and reduce cellular activity and function.*
2. *The roentgen rays produce an endarteritis, particularly in the smaller blood vessels. They cause reduction in the circulation in the areas irradiated.*
3. *The roentgen rays soften horny cells. They "decornify," if I may coin a new word.*

Now then, if you grant that these three claims are true, and you will certainly do this, all you need is to apply them to the tissues involved and *all the curative effects in any of the lesions named in this paper will be explained.*

WARNING

I want to warn you that much more than a superficial knowledge of the roentgen rays is necessary to successfully apply roentgenotherapy.

Let me impress upon you in the most forcible manner that any person, in order to be able to properly apply roentgenotherapy in a safe and satisfactory manner, must first of all be a graduate in medicine, as the basic knowledge of anatomy, physiology and the allied branches of the medical sciences is absolutely necessary. I repeat, a knowledge of medicine is absolutely necessary, and this knowledge, combined with the skill acquired by long experience in the manipulation and administration of this remedy, is essential for the proper handling of this therapy.

The technique of the application of the roentgen rays in therapy is by no means as simple as some of the advertising sales talk of the apparatus manufacturers seem to try to convey; it requires as painstaking and extensive courses of training as is pursued in surgery or any other medical specialty before proper preparation and fitting for this work is complete.

Errors due to lack of knowledge or judgment in the application of the roentgen rays are as liable to produce as serious results as do the same lack of knowledge and judgment in the performance of a serious surgical operation. Accurate observation by a trained clinician who knows how, why and when to proceed, when and where to stop, continue or interrupt the treatment are as necessary in roentgenotherapy as these same qualifications are in any other branch of medicine, and only when these qualifications are possessed by the individual applying the remedial measure can the best results accrue.

The possession of x-ray apparatus does no more make the owner a roentgenologist than does the possession of a lot of brushes and tubes of paint make an artist, or a lot of knives, retractors, etc., make the possessor a surgeon.

None of you would for a moment consider allowing anyone not a physician to prescribe a single dose of morphine, atropine or even less potent drugs, for fear of overdosing. *I want to warn you that, while for morphine and atropine we have sure acting antidotes, there is no antidote for an overdose of the roentgen rays.*

I fear that this has been a long winded dis-

cussion; but I feel that its length was in a measure justified in order to give you a proper idea of "Roentgenotherapy of Conditions Other Than Malignancy."

25 E. Washington St.

FIBRO-SARCOMA OF ORBIT: KRÖNLEIN OPERATION. REPORT OF A CASE*

O. D. CUNNINGHAM, M. D., M. S.

ROCKFORD, ILLINOIS

The literature abounds with reports of retrobulbar tumors. The operative approach for biopsy or removal appears to be quite variable, depending upon the apparent accessibility of the tumor. The perplexing problem, once a diagnosis of malignancy is made, is whether one may ever safely stop short of exenteration of the orbit.

This patient, R. H., was a 17-year-old boy of Swedish parentage. He consulted us, April 29, 1929, because of swelling and discomfort in the left upper lid that had been coming on during the previous two weeks. Both lids, but especially the left, had shown intermittent swelling lasting two or three days at a time. The left eye had gradually become somewhat prominent. The boy stated that from the first he frequently had sharp twinges of pain in it and considerable aching on seeing a moving picture. He had noticed visual impairment in the left eye, particularly for the printed page, and had found it helpful to cover that eye while reading. He thought the electric lights were failing on several occasions at home; his father, however, assured him that they were as bright as usual. From the first he had experienced a little difficulty on looking toward the left. There was no history of eye injury.

His general health had been good and he had noticed no weight loss. He had worked in his father's grocery store since leaving school at the 8th grade.

Examination revealed a prominence of the left eye with some edema of the left upper lid. There was some edema and vascular congestion of the conjunctiva and subconjunctival tissues temporally, especially above the level of the external canthus. There was no tenderness, bruit, pulsation or fluctuation, nor could the swelling be reduced by pressure. Transillumination was clear. There was limitation of extreme abduction of the left eye, but no diplopia at that time. There was a manifest left hypophoria, however, of 2°, and an esophoria of 3°.

The tension was normal, the ciliary body not tender. The media were clear and the pupillary reactions normal. The fundi were normal except that in the left there were undue shimmering light reflexes and a slight vascular congestion.

The vision in the right eye was 6/4-2, in the left 6/15.

*Read before Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, May 5, 1931, at East St. Louis.

Under scopolamine cycloplegia the V. O. S. was improved to 6/7.5-5 by plus .75 plus 1.25 axis 65°. The compound hyperopic astigmatism was presumably due to posterior and supralateral pressure.

Study of the fields revealed a concentric peripheral suppression in the left for both form and color, with inferior segmentation for blue and red and a central scotoma for blue. Edematous lids not retracted, 8/330.

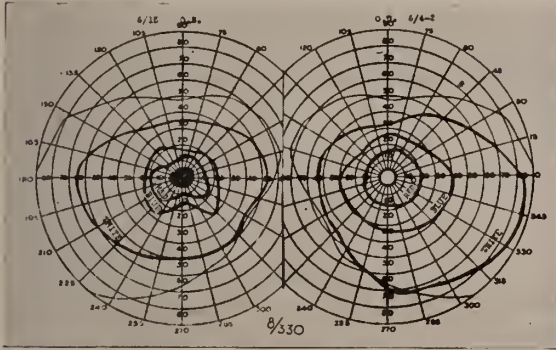


Fig. 1. Pre-operative perimetric fields, showing, in the left, concentric peripheral suppression for form and color, inferior segmentation for blue and red and central scotoma for blue. Outermost line represents normal for white. Edematous lids not retracted, 8/330.

scotoma for blue. (Fig. 1). Interpretation of these findings seemed most plausible on the basis of impaired retinal nutrition from venous congestion or possibly direct pressure. Relative central blue-blindness is said to be characteristic of disturbance of the outer retinal layers; for this reason and the fact that the choroidal congestion was apparently much more intense than the retinal, it was felt that greater damage had been done to the outer, photo-chemical layers than to the inner conduction apparatus.

There was no clinical or x-ray evidence of paranasal sinus disease.

The parents were told that a retro-bulbar neoplasm was suspected and the boy was referred for further diagnostic study.

The general physical and laboratory findings were negative except for x-ray evidence of bilateral fibroid infiltration of the left chest to the 4th rib and of the right chest to the 2nd interspace. In the absence of further evidence it was considered a case of arrested pulmonary tuberculosis.* The blood picture was normal, including a white cell count of 9,000. Two Kahn tests were negative.

Stereoscopic and flat-plate examination of the skull revealed the entire left orbital area to be slightly opaque. The greater part of this opacity was considered due to edema and the protrusion of the eye-ball. There was no evidence of a bone lesion or definite evidence of a retro-bulbar mass.

*Ten months later the patient was re-admitted to the Rockford Municipal Sanatorium for further study. Over a period of five weeks his temperature and pulse readings were normal. X-ray pictures showed no change in lung pathology and sedimentation tests gave no evidence of destructive pathology.

During the two weeks of study and observation the pain was no worse. However, the proptosis advanced steadily to approximately 15 mm. Edema of both upper lids became constant. (Fig. 2, left.) The vascular dilatation and edema of the left conjunctiva and subconjunctival tissues became intense temporally. Diplopia developed and was shown in the diplopia field to be due primarily to a failure of left-sided abduction.

While an orbital tuberculoma seemed a remote possibility, a tentative diagnosis of retro-bulbar neoplasm, probably fibro-sarcoma, was made and exploration advised May 18th. Five days later the advice was accepted and the Krönlein operation done under ethylene anesthesia.

The incision was in the form of a rather sharp arch with its convexity forward and overlying the outer rim of the orbit. Its upper limb extended to a point 1 cm above and 2 cms posterior to the external limit of the eye-brow, the lower limb to a point over the zygoma about midway between the external canthus and the tragus. After the soft parts down to the temporal fascia were retracted, a periosteal incision was made vertically along the outer rim of the orbit and 1 cm posteriorly along the zygoma. Then the periosteum of the outer orbital wall was elevated until the speno-maxillary or inferior orbital fissure was reached. The temporal muscle and underlying periosteum were not elevated except along the two lines of bone section. The lower bone section was made from the origin of the frontal process of the zygoma backward and inward to the anterior end of the speno-maxillary fissure. The upper was made from a point just above the zygomatic-frontalis suture downward, backward and inward



Fig. 2. (Left): Pre-operative appearance, showing proptosis O.S. and edema both upper lids, V.O.S. 6/15. (Right): Appearance 18 months post-operative. Ptosis and slight proptosis O.S.

to a point in the speno-maxillary fissure 1 cm postero-medial to its anterior limit. Section was made for the most part by Gigli and hand saws; a fine chisel was cautiously used at one difficult place.

On reflecting the bone flap posteriorly we found its periosteum involved by a hard, disc-shaped, well-

limited tumor mass about 2.5 cm across and 1 cm thick. The tumor was in the orbital fat just outside the muscle cone and followed the contour of the bulb over its supralateral aspect where it apparently involved the lachrymal gland.

All palpable and visible tumor tissue, including a portion of the lachrymal gland was removed by dissection. The wound was closed with a small rubber tube draining the orbit. Post-operative healing was un-

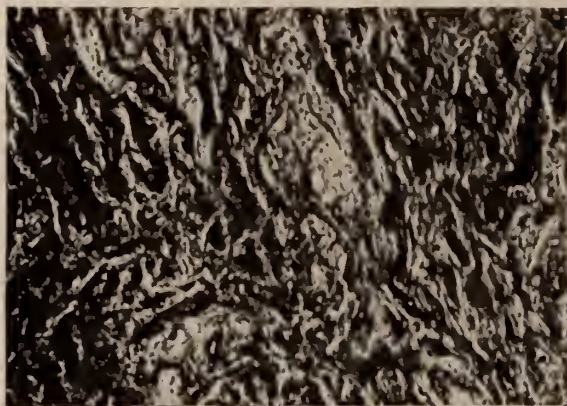


Fig. 3. Histology of the neoplasm from the orbit ($\times 100$). Phosphotungstic acidhematoxylin stain. Note large amount of inter-cellular substance.

eventful except that a ptosis of the left upper lid remained.

Dr. H. D. Palmer, pathologist at Rockford Hospital, has kindly contributed the following report and explanatory discussion:

"Gross description: The specimen is tissue removed from the orbit. It is white dense tissue in one oval-shaped mass $1.4 \times 1 \times 0.8$ cms. The surface is quite smooth. The cut surface remains flat and the edges quite angular. The cut surface has a fibrillar appearance.

Microscopic description: The section stained with hematoxylin and eosin presents a tissue made up largely of intercellular substance in the interstices of which there are spindle cells; a few of these cells present hyperchromatic nuclei. Mitoses are seen but they are infrequent. An occasional inflammatory cell, especially the eosinophile, is seen through the tissue. Fat is being replaced at the periphery. Phosphotungstic acid-hematoxylin stains show the spindle-shaped cells embedded in a large amount of collagen. Fibroglia fibres are quite numerous. (Fig. 3.) One of the sections shows a portion of the lachrymal gland in juxtaposition to the neoplasm. It is involved in a chronic inflammatory process.

"Fibro-Sarcoma is a malignant neoplasm, the type cell of which is the fibroblast. This cell is recognized in neoplastic tissue by its production of fibroglia and collagen fibres, having first been suggested by its usual spindle shape. Pure fibroblastic tumors arise in almost any part of the body and usually exhibit some degree of

malignancy. With the exception of fibroma of the ovary and neurofibromata of the skin there are no common, benign, purely fibroblastic, neoplasms. It is a good rule, therefore, to consider every purely fibroblastic neoplasm arising in places other than the skin or the ovary, at least, as potentially malignant. The pathologist is, however, with at least a fair degree of success, able to recognize different degrees of malignancy and, through experience, he has come to associate fibroblastic neoplasms of certain locations with a certain degree of malignancy. Fibro-sarcoma of the periosteum, for example, is notoriously of a high degree of malignancy. Fibro-sarcoma arising in the fascia of muscles is, notoriously, a neoplasm of low degree of malignancy. The so-called desmoid tumor of the rectus abdominalis fascia is an excellent example. They arise also in the fascia lata, in the scalp, etc. They often grow to large size without metastases and may be removed locally after years of growth with nothing more than local recurrence months or years later. Such a case is cited by Kaufmann.* Grossly such neoplasms are well outlined; growth is more central than peripheral; and there is usually marked differentiation, with a large amount of collagen. There are few mitoses or tumor giant cells, if any. Slowly developing anemia and general signs of malignancy are present.

It is seen, then, that the mere fact that the name fibro-sarcoma is given to a neoplasm is no reason to consider it necessarily a neoplasm of high degree of malignancy. The above picture is not to be considered of the same degree of malignancy as a fibro-sarcoma growing by peripheral invasion and destruction of nor-

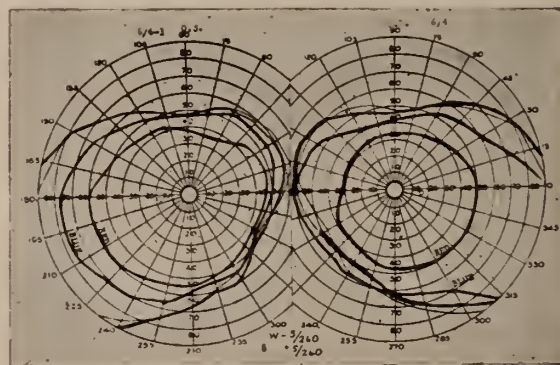


Fig. 4. Normal perimetric fields for white (outermost) and color 18 months post-operative. White 3/260. Color 5/260.

mal tissue and made up of pleomorphic cells with hyperchromatic nuclei, mitoses, tumor giant cells, and very little collagen or fibroglia. The latter has all the criteria of malignancy. The former has many of the criteria of benignity.

It is also to be thoroughly understood that degree of malignancy is controlled by many factors which are entirely unknown. The best we can do is to estimate.

*Kaufmann's Pathology—Blakiston.

The estimate in this particular group is based largely on 1. delimitation or so-called encapsulation of the mass which is interpreted as meaning lack of invasive tendency, 2. microscopic differentiation of the type cell with large amount of intercellular substance and 3. the experience of the person analyzing the situation."

With the report of fibro-sarcoma, our first thought was to exenterate the orbit. However, the tumor was apparently localized, and was, we were told, a type not early to metastasize nor especially prone to recur. If metastasis had already occurred, it was felt this would be beyond the orbit. Exenteration then, could offer but little more than radiation. After consulting with Dr. Palmer we elected to conserve the eye-ball.

One month after operation Dr. Ackemann instituted a course of Roentgen-ray therapy described as follows:

The patient was given one skin unit on the following dates and each directed through the orbital area in the anterior posterior and lateral directions, the latter from the left side:

June 20, 1929
July 20, 1929
Sept. 19, 1929
Nov. 11, 1929
Jan. 22, 1930
Mar. 25, 1930

The following factors were used: One hundred and fifty peak kilovolts, six millimeters of aluminum, sixteen inches distance, five milliamperes, for twenty-four minutes.

The post-operative course has been fortunate to date with no symptoms or signs of tumor recurrence. Recovery of visual acuity was fairly prompt and has been progressive. The refractive error under scopolamine cycloplegia is:

O. D. plus .75 plus .50 axis 105°
O. S. plus 1.00 plus 2.25 axis 96°

and the corrected V.O.D. is 6/4, V.O.S. 6/6-1. The fields are now normal for both form and color. (Fig. 4.) A slight left exophthalmus remains constant. (Fig. 2, right.) There is limitation of extreme abduction and adduction, due, presumably, to cicatricial involvement of the external rectus. The lachrymation of the left eye seems to be rather deficient, but not to the extent of causing trouble. The ptosis has persisted. It was quite unlooked-for, but in retrospect would seem to have been caused by operative trauma to the levator. The patient does not wish an operative attempt at correction.

COMMENT

The Krönlein approach served very well in this instance.

No one may pronounce a cure from sarcoma as early as two years after operation. If, however, one may begin to think of cure that early, it would appear that in this case of relatively less malignant fibro-sarcoma of fascial origin we were justified in conserving the grossly uninvolved orbital structures and trusting to radiation to destroy any remaining tumor cells.

Without the close co-operation of the pathologist we would have sacrificed the eye.

Grateful acknowledgment is made to my senior associate, Dr. L. A. Shultz, Dr. H. D. Palmer, Dr. Justin Steurer, Dr. H. W. Ackemann, radiologist, and Dr. Robinson Bosworth, Superintendent and Medical Director Rockford Municipal Sanatorium, for their counsel and co-operation.

DISCUSSION

Dr. George F. Suker, Chicago: Dr. Cunningham is to be congratulated upon this clear presentation of the question. He has certainly given a very detailed explanation. It opens a large field. Fibrosarcoma is one type of tumor that is likely to be encapsulated, and these have less tendency to general metastasis than other types. The fibrosarcoma arising in the orbit primarily is of the nature of an epulis. It is a local type and metastasis occurs very seldom. The fibrosarcoma that is entirely encapsulated and does not involve the periosteum itself is of local malignancy.

I wish to make one suggestion in regard to the term exophthalmos and proptthalmos. I do not think we should use exophthalmos when we have a protrusion of the globe by the intraorbital contents. In exophthalmos the rotations of the globe are not restricted, but a tumor so often involving some of the muscles we have a limitation of rotations. Therefore I suggest in speaking of intraorbital tumors we use the word proptosis instead of exophthalmos.

I also wish to compliment the essayist on the idea of taking fields of vision in any suspected case of orbital tumor, particularly those at the apex. The fields are prone to be limited because of pressure. You will not have a normal field nor normal fusion. The fields may be of the hemianopic or concentric type. These tumors do involve the circulation by constriction and you are bound to have more or less manifestation of this in the retina, as Dr. Cunningham mentioned. I would not suggest the excessive use of radium or x-ray for after treatment when a useful eye has been retained. It may not occur forthwith, but months later the patient might develop an optic atrophy, cataract or severe corneal lesions.

The question of diagnosis of intraorbital tumors is

always more or less problematical. You cannot say definitely that it is a glioma, sarcoma, carcinoma, osteoma, fibroma or what not. You are never sure in any tumor that it has not begun to infiltrate. It is not always necessary to sacrifice the lids and leave an ugly socket. You are usually perfectly safe in leaving the lids and a large part of the conjunctiva and anterior orbital tissue, and thereby secure a relatively efficient cul de sac for a prothesis.

There are several points about the Krönlein operation which Dr. Cunningham probably has in mind; it is a nice operation, but unless done carefully the end results are apt not to be very cosmetic. I prefer a circular dental saw instead of a chisel. You sacrifice little bone and secure a better restoration of the outer wall of the orbit. Then too, for the exenteration, use the electric cautery or radium knife, so as to have as little bleeding as possible; thorough cauterization has a curative value. This should be followed by intensive x-ray treatment for four or five days, then a series of x-rays at intervals of six weeks or longer.

Dr. O. D. Cunningham, Rockford (closing): I am grateful to Dr. Suker for his enlightening remarks. If this paper has any value it is by way of emphasizing the need of cooperation between the ophthalmologist and pathologist in diagnosing these cases and in making decisions as to further treatment, once the diagnosis is made. The clinician can observe rapidity of growth and operative findings, but the pathologist should be the one to pass upon the tissue grossly and microscopically and determine whether it is embryonic and rapidly growing and therefore more dangerous; whether the encapsulation is complete, and whether there is a probability of infiltration of surrounding tissues.

THE MAGGOT TREATMENT OF OSTEO-MYEELITIS*

JACOB MYERS, M. D., F. A. C. S.

AND

LEO M. CZAJA, M. D., F. A. C. S.

CHICAGO

The maggot treatment of Wm. S. Baer¹ for osteomyelitis is advocated as an economical, efficient form of therapy which produces healing without draining sinuses in the shortest length of time, with the quickest return of function and the least retraction of the scar of any treatment in use at the present time.

As evidence of the inadequacy of other methods of treatment we offer a few statistics gathered from the literature. Dean Lewis² in a study of 229 cases, found that fifty per cent. of all cases were discharged as improved, but with

sinuses and unhealed wounds, which required multiple operations for recurring attacks and abscesses. Forty-nine cases were cured, six were not improved, twelve died, and 64.5% were complicated with one or more joints involved.

W. H. Ogilvie³ in a study of 51 cases at Guy's Hospital for 1922 to 1926 states that 21% died, 51% were discharged with healing wounds, 16% were discharged with wounds all healed, 8% had amputations, 2% were transferred to another hospital and 2% were sent to an infirmary.

The object of the surgeon in the treatment of this condition since its original description by Lannelongue in 1879, has been to remove the necrotic bone and to rid the bone of micro-organisms by the establishment of adequate drainage and the application of antiseptics. These conditions were thought to be necessary for the regeneration of bone and the re-establishment of health. This has been impossible of accomplishment by previous surgical measures because of the structure of bone tissue.

Orr,⁴ in his method of treatment advises the avoidance of antiseptics and chemical irritants and recommends adequate drainage, immobilization and rest in correct anatomic positions. The method of Baer uses the viable antiseptic properties of the maggots which operate without irritation and without interfering in any way with Nature's healing process.

PATHOLOGY AND PATHOGENESIS

Bacteriology. The infecting organism is usually the staphylococcus aureus, although the infection may be due to streptococcus, pneumococcus staphylococcus albus, typhoid bacilli, or other organisms. These are usually brought to the bone via the blood stream. The metastasis occurs from a lesion of the skin, tonsils, middle ear or other focus of infection. Direct infection may occur in penetrating wounds such as compound fractures, gun shot or stab wounds. Very rarely there may be a direct extension from infection of the contiguous soft tissues.

Relationship of Anatomical Structure to Pathology. The nutrient artery enters the bone through the nutrient canal near the middle of the shaft. It is distributed throughout the medullary canal and to the deeper portions of the surrounding cortex. These arteries are directed toward the elbows and from the knees except in

*Read at Annual Meeting of Illinois State Medical Society, Section on Surgery, at East St. Louis, May 6, 1931.

the fibulae. The epiphyses toward which they are directed ossify earliest.

The metaphyseal arteries entering through the cortex supply the spongy bone of the juxta-epiphyseal region and the deeper parts of the overlying cortex. After ossification of the epiphyses



Fig. 1. (Case A. O.) Lower end of right femur showing sequestrum and large perforation of the bone. There is also a disalignment of the shaft resulting from a previous pathological fracture following operation. Recurring lesions have existed for twenty-four years. Three sinuses were draining at the time of operation.

the metaphyseal group of arteries lose importance and unite with the branches from the nutrient artery. There is a small area of bone between the diaphysis and the metaphysis which has a lessened quantity of blood supply. Some authors think this is a determining factor in the localization of the infection in this area.

The periosteal vessels supply the superficial layers of the diaphyseal cortex. They pass from the periosteum into the Haversian canals. In the deeper portions of the cortex they anastomose with small branches from the nutrient artery.

Significance of the Epiphyseal Cartilage and Contiguous Areas. Lexer⁵ has shown that the metaphyseal arteries terminate in loops where the blood current is slowed. This area offers a favorable pabulum for bacterial emboli which become arrested here. The avascular part, separating the diaphysis from the metaphysis forms

a real barrier against the spread of infection into the diaphysis by direct continuity.

The epiphyseal cartilage is firmly adherent to the surrounding periosteum at its surface. This offers a very efficient protection against direct invasion of the joint. After ossification of the epiphyseal cartilage, localization in the metaphysis is not so common. In adults the original focus may start in any part of the diaphysis as well as near the ends of the long bones.

The role of the Periosteum. Periosteum is a fibrous tissue membrane. It contains the blood vessels which pass from it directly into the bone through the Haversian canals. The nutrient artery also penetrates it. Some connective tissue fibers accompany the vessels passing into the Haversian canals. These are the fibers of Sharpey. Stripping of the periosteum interferes with the circulation of the superficial layers of the bone. Infection under the periosteum readily



Fig. 3. (Case E. J.) Osteomyelitis and large sequestrum involving lower end of left tibia. The disease was of two years duration. Patient had two previous operations.

Fig. 4. (Case E. J.) Lower end of left tibia two months after sequestrectomy and eight maggot implantations showing considerable regeneration.

extends along the blood vessels and the fibers of Sharpey whereby it may gain entrance into the medullary canal.

Reaction of the Bone Marrow to Infection. The bone marrow is a parasitic mass of lymphoid tissue occupying the medullary canal and the

inter-trabecular spaces of the spongy or cancellous bone. When it becomes infected it responds with typical reactions of inflammation tending toward abscess formation.

Metaphyseal Osteomyelitis. The present understanding of this condition is the result of the work of Clarence Starr⁶ published in 1922. The initial lesion in hematogenous osteomyelitis of growing long bones occurs at the juxta-epiphyseal region of the metaphysis. It begins as an inflammatory lesion of the marrow in this area. By direct spreading it reaches the surface of the bone. The pus forms under the periosteum and strips it from the bone. As the infection extends into the Haversian canals it finally reaches the medullary cavity and involves the marrow inhabiting it. Thus the medullary cavity becomes involved by retrograde extension from the surface and not by direct invasion through the metaphysis. When the periosteum becomes penetrated, the surrounding soft tissues are involved and the pus finally escapes through necrotic openings in the skin.

Diaphyseal Osteomyelitis. After the epiphyseal cartilages have disappeared by ossification, the localization is determined by nutrient artery distribution. The lesion may start near the

spread. An attempt at walling off is more apparent with the formation of localized abscesses surrounded by sclerotic bone. If the infection reaches the surface it usually penetrates the periosteum without stripping because it is firmly adherent. The periosteum may become perfor-

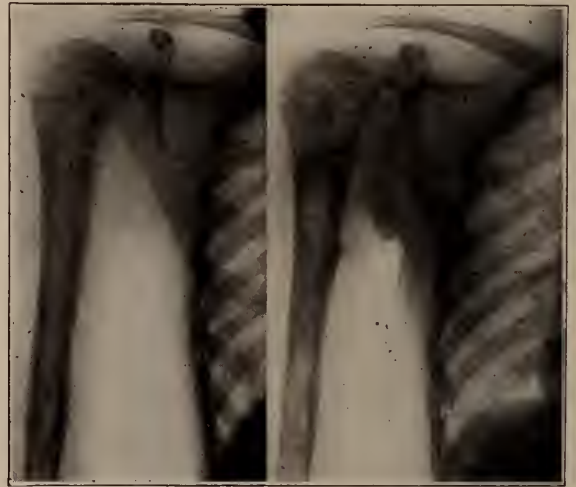


Fig. 8. (Case J. B.) Osteomyelitis of the upper third of left humerus showing sinus in upper portion and small sequestrum in middle portion.

Fig. 9. (Case J. B.) Nine weeks after operation. The small sequestrum has disappeared spontaneously. The upper portion shows considerable bone regeneration. Patient had six implantations of maggots.



Fig. 5. (Case E. J.) Before operation. Discharging sinuses above ankle.

Fig. 6. (Case E. J.) Wound extending directly into tibia three weeks after operation. Granulations are well shown after second implantation of maggots.

Fig. 7. (Case E. J.) Wound completely filled with granulations ten weeks after operation.

middle of the shaft or at one end. It spreads along the cancellous tissue lining the deep surface of the cortex, or directly along the marrow. It may extend from the middle towards the ends or from one end through the shaft to the other end. In old bones there is less tendency to

ated allowing pus to escape into the surrounding tissues forming migrating abscesses which form sinuses and discharge through the skin.

Histopathology. The infected area of the metaphysis presents small purulent foci in the bone marrow. It begins with hyperemia, exudation and small hemorrhages into the marrow resulting in necrosis. These minute areas coalesce to form small abscesses. The bone trabeculae become absorbed and break down. Thus by extension of the process towards the surface, pus collects under the periosteum near the epiphysis. The increased pressure under the periosteum loosens it from the shaft of the diaphysis. Then coagulation and hemolysis occur in the capillaries of the Haversian canals of the cortex. This results in necrosis of the shaft reaching to the medullary canal. The central bone marrow becomes necrotic by the same process. Dead and dying bone cells, bacteria, large mononuclear and polymorphonuclear leucocytes are plentiful in the necrotic areas. Thus by being deprived of

blood supply, large portions of bone become necrotic.

THE PROCESS OF HEALING AND REPAIR

Involucrum Formation. The under surface of the periosteum gives rise to budding capillaries surrounded by young connective tissue cells. This embryonal connective tissue projects toward the bone surface and gradually fills in the space between the stripped periosteum and the bone. The fibroblasts of this embryonal connective tissue assume the role of bone cells by a process of metaplasia.⁸ The contact of the young capillaries with the necrotic bone produces resorption of its calcium and phosphorus salts. This results in a localized surcharge of calcium and phos-

phorus until the necrotic bone is entirely separated from the living bone by granulation tissue which may contain considerable pus.

The shape of the sequestrum is pyramidal with its base at the epiphyseal end and its apex at the point of contact between the periosteum and bone.⁶ The sequestrum thus formed is a foreign body which must be removed. The capillaries continue to grow into its spaces carrying with them new granulations. Thus it is slowly resorbed and broken down. This process is slow, and has a tendency to perpetuate the diseased condition, because the bacteria in the necrotic bone are protected against the natural defensive mechanism of the blood, which no longer circulates through the sequestrum. The only points of attack are on the surface and the spaces into which the capillaries may grow from the surrounding living tissue. The pus formed by the chronic infecting disturbance is discharged through the involucral cloacae which open into the sinuses between them and the skin.

GENERAL PATHOLOGICAL CONSIDERATIONS

At some time in the disease the infecting organism appears in the blood stream. After localization in the bone the growth of the bacteria may be rapid or much delayed. The toxin formed here may sensitize the individual or produce a condition of allergy which deprives his blood of defensive qualities. After this occurs the development of the bacteria in the blood becomes rapid and the patient may die of toxemia regardless of whether the periosteum is incised or the bone opened. The clinical picture of toxemia does not correspond to the anatomical picture. These are the fulminating cases that do not respond to surgery as described by Looser.⁹

Healing after Removal of Sequestrae. An operation for sequestrectomy leaves a large opening through the involucrum. The cavity in the tubular involucrum has a wall of rigid, spongy bone. At its upper and lower ends where the sequestrum has become detached, there remain areas of devitalized bone, which have not separated. Just beyond this area portions of the spongy bone or the Haversian canals of the compact bone still harbor the infecting organisms. Small necrotic areas, or isolated abscesses, not visible at the time of operation may nevertheless exist. The granulation tissue adherent to

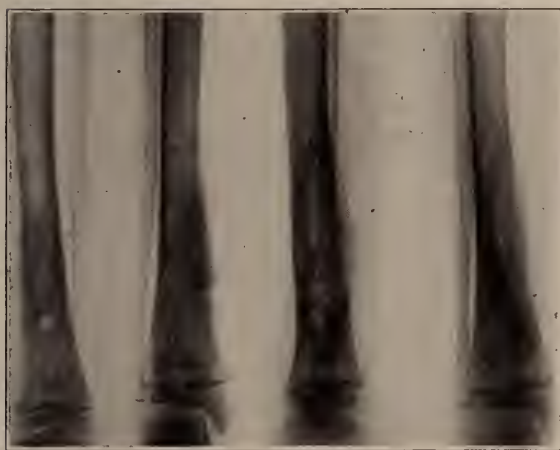


Fig. 10. (Case J. B.) Lower end of left tibia showing necrotic bone and cloacae.

Fig. 11. (Case J. B.) Lower end of left tibia showing bone regeneration after operation and six implantations of maggots.

phate in the fluid media. As the bone cells prepare the area for solidification, changes occur in the character of the media. These changes progress until the area produces a shell of cancellous bone about the old necrotic area. As the process proceeds the bacteria and leucocytes tend to disappear. When they remain, the involucrum is imperfectly formed. The necrotic areas in the periosteum remain as openings or cloacae in the involucrum.

Sequestration. The live bone area contiguous to the necrotic bone becomes hyperemic. Budding capillaries and embryonal connective tissue spring from the living bone and grow toward the dead bone. Resorption of the calcium salts oc-

the wall and surrounding the sequestrum also contains the bacterial invader. (Figs. 1 and 2 A. O.)

The method of nature is to fill the cavity with new connective tissue originating from the connective tissue of the live bone and periosteum. This tissue gradually extends over the interior surface of the involucrum from its edges where the periosteum covers it, and from the parts of the bone forming the ends of the cavity. By gradually piling up this granulation tissue the cavity becomes filled. The new connective tissue is embryonal in type. By a process of metaplasia it can result in fibrous connective tissue (scar tissue), cartilage or bone. If the dead bone is all removed and the bacteria disappear, the end result will be bone. However, owing to the impossibility of destroying the bacteria, healthy bone is not often formed. In a single case all three types of connective tissue may be present at the same time.¹⁰ This shows the presence of some influence which is retarding bone formation. Large numbers of polymorphonuclear leucocytes (phagocytes) and bacteria inhibit bone formation. As the new bone is formed, it becomes infected, dies and forms sequestra. Thus the process becomes continuous, with a constant attempt to extrude dead fragments of bone, and to replace them with connective tissue, which by metaplasia may restore the bony defect.

Sometimes the stimulative action of the toxin and sequestra result in dense sclerotic bone formation about the cavity. This hard bone has little tendency to form new granulation tissue. Thus the cavity may remain indefinitely, containing pus or a gelatinous fluid with no tendency to further destruction. (Figs. 3, 4, 5, 6, 7, E. J.)

DIAGNOSIS

Acute Hematogenous Osteomyelitis. The onset is sudden, with fever and intense pain which is constant and predominant at the site of the lesion in the affected bone. There is a corresponding finger-tip area of tenderness on pressure over the site of the lesion. In a short time swelling appears over the affected area. When the lesion extends to the periosteum, redness, edema and induration of the overlying skin occurs.

Chronic Osteomyelitis. The diagnosis is made on the history of an acute onset followed by

the formation of abscesses, discharging sinuses and sequestra. The roentgenogram discloses the exact condition of the bone. When the condition is due to injury, the diagnosis is obvious and the roentgenogram confirms the diagnosis.

DIFFICULTIES TO BE OVERCOME

1. Drainage
 - a. Adequate drainage in bone tissue is well nigh impossible on account of the rigid tissue and small enclosed bone spaces.
 - b. A large amount of living tissue must be sacrificed to secure drainage by operation.
 - c. The operation spreads the infection into non-infected areas.
 - d. Necrotic bone or sequestra, harbor infection indefinitely because they are isolated from the protective influence of the circulating fluids.
 - e. Sinus formation perpetuates infection in the soft tissues.
2. Sequestrectomy.
 - a. Removes much viable bone to expose the sequestrum.
 - b. Often live bone cannot be differentiated from dead or dying bone, hence sequestra continue to form after the operation.
3. Resistance to infection
 - a. Chronic retention of infection sensitizes the individual and reduces his bactericidal ability. (Figs. 8, 9, 10, 11, J. B.)

TREATMENT

Why have old methods failed?

There are over 10,000 unhealed cases of osteomyelitis in the United States. All of these are in a state of invalidism. They have all had some kind of surgical treatment. This treatment has failed to cure. An average of 60% of cases of acute osteomyelitis are dismissed from hospitals as improved. This means with discharging and unhealed wounds.

The great diversity of opinion as to the proper surgical handling of acute osteomyelitis bespeaks its difficulty of cure. The obstacles to be overcome are generally well understood, but no adequate means has heretofore presented itself.

The general tendency has been to establish drainage by removal of more or less of the bone and then to annihilate the bacteria by the application of various chemicals in solution. This includes all the methods of drainage with or

without tubes or other forms of drain; irrigations, as in the Carrel-Dakin method, and the application of packs, saturated with the chemical solutions. It was hoped that the antiseptic solutions would somehow reach all the micro-organisms and cause the wound to become aseptic. This actually happens in some of the cases treated by the Carrel-Dakin method. These however, are included in the 40% of cases which get well and are not under discussion. This condition of asepsis follows in too small a percentage of cases to make the treatment a standard one.

The fact remains that owing to the non-collapsible walls of the bone spaces in the cancellous portions and of the Haversian canals of the compact bone, viable micro-organisms become so isolated that they are never reached by the antiseptic solution. Hence they have a tendency to perpetuate the condition.

The next important problem where surgery has failed, is the removal of the necrotic bone. We need only to suggest that it is impossible under ordinary conditions at operation to differentiate between living, dying, and dead bone, especially if there are no loose sequestra. The very fact that some still advocate the total removal of the diaphysis is a confession of this fact. They would rather remove the whole bone than chance leaving some dead bone behind. Furthermore, there are many illustrations of the fact that some cases heal without the removal of sequestra.

After removal of large pieces of bone it has been a problem to eliminate the remaining cavity. This has been attempted by the folding in of the surrounding soft tissues to eliminate the space. From a functional as well as cosmetic consideration, the results are far from encouraging.

The treatment with maggots after the method of Wm. S. Baer, seems to cope with these difficulties in a measure beyond all expectations. The maggots remove bacteria mechanically by ingesting and digesting them. They also excrete or cause to be excreted something in the wound which has a definite germicidal action. The bacterial count of smears taken from week to week in any case under this treatment shows a marked progressive diminution in the number

of bacteria. The final result of the action is that the maggots themselves cannot live in contact with the wound.

The removal of dead tissue from the wound by the maggots is almost phenomenal. They feed on the devitalized tissue until it has all disappeared. So soon as they attack tissue which is viable and demonstrates its vitality by bleeding they immediately desist and leave this scene of action. Hence there is no danger of any living tissue becoming injured or removed by the maggots. They go on feeding on the dead tissue while the new succulent granulation tissue is springing up all around them and in no way interfere with, but rather seem to stimulate its growth.

A bone wound under maggot treatment fills in with granulation tissue in a few weeks. This granulation tissue originates from the periosteum and from the connective tissue of the contiguous viable bone. It quickly covers the floor of the wound as well as the side walls and roof of the tube of bone. It seems to immediately form over the areas that have been cleaned up and freed of thin necrotic covering by the maggots. The granulations keep piling upon themselves until the entire cavity has become eliminated, then the epithelium merely grows over the surface. The contour of the limb is normal, there are no depressions or flattening, except in those cases where previous operations have removed much bone tissue and distorted the contour of the limb.

THE MAGGOT TREATMENT

Indications.

Acute osteomyelitis after eight days of drainage.

Chronic osteomyelitis.

Tuberculosis of bones and joints.

Osteotomy and Sequestrectomy.

General Preparation.

Most of these chronic cases are anemic and have little reserve vitality. Some are suffering from chronic parenchymatous degeneration of the viscera or even amyloid disease. A preliminary course of iron tonics and liver extract is advisable. A diet rich in albumin and minerals to replace the devitalized tissues and plenty of fluids should be given to replace those lost by constant drainage. During this preliminary

period the patient's morale may be built up and he may be allowed to see other patients improving under the method, to create anticipation, enthusiasm and co-operative spirit.

During this period the affected limb is kept at rest and the skin kept clean by frequent changing of dressings. No antiseptic solutions are applied. The skin may be cleansed with soap and water and dry sterile dressings applied. The operation should not be attempted until the general condition is good enough to make the administration of a general anesthetic safe. The possibility of considerable loss of blood at the operation must also be kept in mind.

Operation. The limb is washed thoroughly with soap and water and dried. A large sterile dressing is applied and covered with a towel. The instruments are sterilized in the usual way. The operator and assistants scrub and prepare as for any major operation. The patient is draped with sterile sheets. No iodine or other antiseptics are applied after the dressings are removed. If any pus is present it is wiped away with sterile swabs and normal salt solution. A tourniquet is applied to prevent hemorrhage.

Incision. The length and location of the incision are determined after the extent of bone involved and presence and location of sequestra are determined by good x-ray plates taken in several planes. The larger the sequestrum, the longer the incision. The exact location of the incision should be as nearly over the involved area as possible. The character of the tissues over the bone and feasibility of keeping the cage in place later may influence the position and type of incision. In the leg it is better to make the incision on the inner side of the inner border of the tibia. In the thigh the incision is best made anteriorly or laterally. In the arm the incision should be made anteriorly. The incision is made parallel to the long axis of the bone and directly down to it through the periosteum.

A window is chiselled through the involucrum bringing the sequestrum into view. If no sequestrum is present, the window is made through the cortex into the necrotic area. The sequestra are gently loosened and removed. The cavity is cleansed with small swabs. If a curette is used care must be exercised. It is better not to scrape the bone. If large blood spaces are opened embolism may follow.

It is not necessary to saucerize the bone or to remove overhanging ledges unless they are necrotic. The greatest conservatism is exercised in removing viable bone. The small amount of non-viable bone accidentally left will separate and be removed by the maggots. When the wound is thoroughly cleaned out and dried with small stick sponges held in forceps, a final inspection is made. The wound is then packed with sterile vaseline impregnated gauze to the very top. Baer in outlining his treatment advocated the use of plain gauze. We have found the removal of plain gauze a very painful procedure, which is usually followed by subsequent bleeding and have therefore adopted the use of vaseline gauze. A few dry dressings are placed over this and a firm bandage applied. This may be covered by a starch bandage to continue a slight pressure on the packing, which decreases hemorrhage.

The tourniquet is removed and the limb is enclosed in sheet wadding. Any deformity is corrected and the joints are placed in a position of physiological rest. A posterior or anterior molded plaster splint is applied to hold the limb in position. The splint must be placed in such a position as not to interfere with the future dressing of the wound. After this operation there is practically no pain if the limb has been securely immobilized.

In some cases it is advisable to give 500 to 1,000 cc. of normal salt solution subcutaneously to combat shock and to further rapid convalescence. If pain should occur, small doses of morphine will easily control it.

Implantation of Maggots. Three or four days after the operation, the bandages and dressings are removed under aseptic precautions,—the vaseline gauze is gently withdrawn with hemostatic forceps. If sufficient gentleness is used and the packing gradually removed, the procedure is painless and very little hemorrhage follows.

The skin about the wound is dried with sterile swabs and a cage is applied with adhesive plaster and securely fastened without undue pressure. The maggots are introduced through an opening in the cage. The opening is then closed with its lid, which is also fastened with adhesive plaster. The maggots, when introduced, are from 48 to 60 hours old. They are left in the wound five days, when they are washed out with

sterile normal salt solution and new ones are implanted. A new cage is applied each time.

The patient can feel a slight biting sensation when the maggots attack the tissue. Sometimes a severe tickling sensation is experienced when they wriggle along the skin. This may be stopped by covering the skin within the cage with a thin coating of collodion. This is seldom necessary but does no harm.

During the first four or five applications, the maggots grow and thrive on the food obtained in the wound. While this is going on considerable thin serous discharge drips through the cage. There is some odor—and the soiled cage and dressings are no things of beauty.

Gradually the discharge becomes lessened and the odor almost disappears. The wound secretion turns from acid to alkaline in reaction, and the bacterial count diminishes until they disappear entirely. After about five to eight applications the maggots die within a few hours after being placed in the wound. About this time the cavity has become filled with healthy granulations until they are even with the skin edges. It will be noticed that the wound is much narrowed and shortened in length. The maggots are then left out, but the wound is covered with the same type of cages which allows light and air to enter. Gradually the epithelium covers the granulations and the wound is healed.

Sometimes in a few days the pus reappears and the wound seems to cease healing. The granulations become covered with a yellowish or grayish membrane and the wound again becomes acid in reaction. Maggots are then re-implanted until the wound cleans up and they again die in contact with it. A few days later the wound closes.

CONCLUSIONS

1. The maggot treatment for osteomyelitis is practical.

2. It overcomes the difficulties which have determined failure in many other methods of treatment.

3. This treatment employs the principle of a viable antiseptic which works in accordance with the doctrine of Lister.

4. The period of its use in the treatment of osteomyelitis is too short to draw definite con-

clusions as to the permanency of the healing.

1903 South Michigan Avenue.

1530 North Damen Avenue.

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DISCUSSION

Dr. George deTarnowsky, Chicago: I just want to illustrate the fact that those of us who served overseas learned to appreciate the live-saving properties of our faithful friends, the maggots. During the Argonne siege we received in the evacuation hospital soldiers who had been wounded ten days previously and had only received one dressing. It was surprising to find that these cases full of maggots presented clean, dry wounds. These patients came in afebrile with no sign of sepsis.

There is no question but that the maggot treatment is an excellent one. Baer in the base hospital had occasion to observe that more closely than we did in the evacuation hospital, because we had to get rid of our cases in twenty-four to forty-eight hours. The surprising thing is that Baer laid so much stress on the sterilization of the maggots. Maggots are scavengers and they do not touch living tissue. Why he should go through all this formality of sterilization I do not know. None of the maggots in the Argonne were sterilized. They got into the tissues and stayed there. If you put a piece of stale meat in the basement and get it full of

maggots, you will get just as good treatment as Dr. Baer had. It is coming back to Dame Nature. I think it is an excellent method.

Dr. Frank G. Murphy, Chicago: At the University of Illinois we are using the Orr treatment quite extensively. We have between ten and twelve cases there now on this treatment. The period of disability has been rapidly shortened.

I am very much impressed with this new maggot treatment which Dr. Czaja has shown. If it will reduce the period of recovery as much as he says it has, I think it will be a fine thing to try in selected cases.

Tetanus was a potential danger in all wound cases in the European war. I was over there. All wounds were given antitetanic serum. I hardly believe the maggots were instrumental in causing tetanus.

Another thing about the maggot; thirty years ago we had a famous surgeon in South Chicago by the name of Larkin. Occasionally in the summertime dressings would get filled with maggots. This surgeon would take off the dressing, clean off the wound with alcohol, brush the maggots into the wound and re-apply the dressings. The results were good. This treatment can be used not only in osteomyelitis cases but in chronic septic cases.

Dr. A. H. Baugher, Chicago: I would like to ask the essayists if the maggot treatment would be beneficial in cases of extensive burns where we have ulcerating, infected areas, highly resistant to epithelialization, many of which under the present method of treatment yield abundant scar tissue or keloid formations, which may ultimately result in a malignant transformation, usually sarcoma; or in very old cases of osteomyelitis, for instance of the tibia, where a portion of the margin of the ulceration in time may develop into a carcinoma I have in mind two patients—one developed a sarcoma from a scar due to a burn received as a child twenty-five years previously; the other developed an epithelioma in the margin of an ulcer to a fistula leading to an osteomyelitic process in the tibia, of a man of fifty years who has had osteomyelitis for thirty years. If the maggot treatment is good for dead tissue, as this is apparently the basis for treatment, would it not be good for large ulcerating areas which later may produce malignant changes? This method of treatment then, in so far as it is an aid, would shorten convalescence and also be prophylactic regarding malignant growths.

Dr. Philip H. Kreuscher, Chicago: Since Orr described his treatment four or five years ago I have followed his technic rather carefully and have operated on nearly 300 cases of osteomyelitis involving the various bones of the body with results better than any that I had obtained previously. I have not subscribed to nor have I used the maggot treatment for two reasons: first, because we are getting better results with the Orr treatment than we had ever gotten before, and second, because of a personal abhorrence I have to the presence of foreign objects, such as maggots, anywhere near or on the body. I do not know what the reaction would

be in a private patient if you were going to implant maggots into his jaw bone.

The work now being done by Livingston at the Edward Hines, Jr. Hospital is very good. Incidentally, I understand that Livingston is the man who worked with Dr. Baer. As I understand it, Livingston worked a great deal on the sterilization of maggots. I do not want to anticipate any report which he may make in the very near future, but I predict from what I have seen over there in the last three or four weeks, that in the very near future a report will be made concerning an enzyme or a secretion from these maggots which will make it unnecessary to introduce the actual maggot into a wound. I am very much impressed with some of the results I have seen.

I feel that Dr. deTarnowsky is probably not entirely correct when he states that maggots are not septic. I believe that Dr. Baer reported one case of tetanus which he saw in connection with the maggot treatment. As I said in the beginning, any treatment which gives us better results and more rapid results must be adopted sooner or later. If we can once educate our patients to endure an application of this sort of thing, it will probably be more extensively used, unless someone in the near future can show us something where the actual maggot treatment is not necessary.

Dr. E. H. Weld, Rockford: It seems to me there is an explanation of why the Orr treatment does the work it does. There is no doubt it is a good line of treatment. Many of us had our surgical practice in college days by dressing these bad cases of osteomyelitis, and until I saw the Orr treatment I would have gotten on the stand and said that any man who left a dressing on three weeks would be guilty of malpractice. Dr. Kreuscher hit on it when he spoke of a maggot enzyme. I think there is a bacteriophage produced there and that is a possible reason for the success of the maggot treatment.

Dr. Jacob Myers, Chicago (closing): Dr. Kreuscher anticipated me in answering Dr. deTarnowsky's question as to the advisability of sterilizing these maggots. I had a talk with Dr. Baer and he informed me that he had not one but three cases of tetanus, one of which died. He also had a case of gas bacillus infection that died. Those were not anything but a surface infection of the maggot and occurred before he sterilized the maggots. We cannot sterilize the inside of the maggot. We try to keep them aseptic. These maggots are raised from sterilized eggs. The egg is sterilized on the surface in 1:1000 bichloride of mercury to which is added one-half per cent. hydrochloric acid. When the maggot is hatched out it has had no contact with septic material. After incubating on sterile media for forty-eight hours we presume there is no surface infection. What goes on inside the maggot we do not know. If you attempt to apply the treatment do not forget that sterilization is an important feature of maggot treatment. The maggot treatment is an old treatment. Sterilization originated by Dr. W. S. Baer brings the treatment under control; in other words, you

are not adding insult to injury. If you use sterilized maggots, you are at least not doing any harm.

The question was asked about using them for burns and in old cases of osteomyelitis. In burns where you have extensive necrosis of tissue it probably would be good. Practically it would be a hard thing to cover a large area with maggots and keep them in contact. Having a large surface lesion, I cannot conceive of any way in which you could keep the maggots in contact. Any case of osteomyelitis, old or new, is amenable to treatment. If you have epithelialization that has gone on from the skin into the wound and has become malignant, the maggots will not cure it. If it is a question of removing necrotic tissue or bone, the maggots can do it.

The question of what the maggots do; this idea of something being developed in the way of a protective body was absolutely original with Dr. Baer. He had an idea that either the maggot developed something or the irritation of the presence of the maggots caused the cells to develop something which had a beneficial action on healing, but we must not lose sight of the mechanical action of the maggots. They do ingest and digest this necrotic material and mechanically remove it. So you have not only the mechanical action but the biochemical action also.

So far as the bacteriophage action is concerned, McDonough says there is no such thing as bacteriophage. "That conception of the bacteriophage is due to the profession's general misunderstanding of the principle of immunity. The protein particles in the local area of infection and in the blood plasma act as immunizing bodies. When they become dehydrated or condensed they lose this property of producing immunity." So we are not sure there is such a thing as bacteriophage. Why go into any lengthy discussion about it. No one has ever seen it or proved the existence of it and McDonough has proved the non-existence of it.

In regard to the Orr treatment, if the Orr treatment is as efficient as we are led to believe, why after twelve years are there 10,000 cases of unhealed osteomyelitis registered in the U. S. Veteran's Bureau. This Orr treatment has been taught to all men in the government hospitals, besides being used in private hospitals.

The reason we went into such details in this study of the anatomical and pathological considerations was for that very purpose; to figure out the reason why the former methods of treatment did not do what we expected them to. If you give time enough, nature will do almost anything without any help. We have figures we must face, figures by Dean Lewis in an article written as late as 1929. There are now sixty per cent. of unhealed cases that had the Orr treatment and every other treatment. We had only a small number of cases in which we applied the Orr treatment; may be we did not apply it properly. We come down to the principle of attempting to do what nature tries to do, to get rid of bacteria and get rid of dying and necrotic bone. This method of treatment could very well be added to the Orr idea. In other words, we do not have any quarrel with Orr on the proposition of

adequate drainage or any quarrel on the proposition of proper anatomical position or on the question of proper immobilization. We agree with all those things. We believe that in maggots we have an added factor that expedites the very things that nature is trying to do.

RHEUMATIC INFECTION IN CHILDHOOD

H. WILLIAM ELGHAMMER, M. D.

Associate Clinical Professor of Pediatrics, Loyola University
School of Medicine

CHICAGO

Rheumatic infection in children must be considered and defined as a general systemic infectious disease, the presence of which antedates such classical symptoms as joint pains, choreiform movements and cardiac manifestations. This disease complex presents a variety of symptoms not met with in adult life and differs greatly from the common conception of rheumatism.

Heart disease now occupies the first place among the causes of death. Most cases of heart disease among young adults dates back to childhood. These facts make the study and care of rheumatic infections in childhood of greatest importance.

Much work and study have been done in regard to the etiology of this disease complex. There may be some racial difference but our present statistics do not allow one to draw any definite conclusions. Climate seems to have decided influence upon the incidence of rheumatic infection. Statistics from Bellevue Hospital show that 43 per cent. of rheumatic manifestations occur during spring and early summer. The highest incidence in London, England, was found in late summer and fall. These periods correspond to the most changeable and damp seasons of the respective countries. Two-thirds or sixty-seven per cent. of rheumatic diseases in children occur between the ages of five and nine years. It is a disease of early child life. Statistics and our clinical experience clearly point to the existence of a marked family tendency. We often see several children in the same family exhibiting various forms of rheumatic infection. Certain instances have been observed where children brought in close contact with rheumatically infected patients later developed various forms of rheumatic disease. This would suggest the possibility of contagion. It is interesting to note

that the sanitary conditions do not seem to influence such prevalence to any marked degree, but management in regard to regular hours and regular habits of sleep, reasonable care in dress apparently have an influence on the incidence of rheumatic infection. There seems to be an individual predisposition. Some patients have a tendency to repeated attacks of same or different forms of rheumatic infections during a period of a few years. A certain group of children who exhibit very active lymphoid tissues, often termed exudative type, seem to be predisposed to repeated infections which often lead to rheumatism. The exciting organism is said to be various strains of non-hemolytic streptococci, but this cannot be said to be definitely proven nor has it been shown to be in any sense specific. Many children may be infected with similar strains of streptococci but only a few develop rheumatic infections. We may find an explanation for this in the theory that certain individuals are allergic to certain strains of organisms. Some workers have shown that rheumatic patients give positive skin reactions to streptococci or proteins from streptococci.

Repeated tonsillar and adenoid infections have long been regarded as the main introductory disease of rheumatic infections. Recognition of chronically infected tonsils and adenoids and their early removal has done much in preventing and lessening the incidence of rheumatic infections, but this has not solved the problem. Dental caries and hidden sinus infections possibly play as great a rôle in producing a fertile soil. The often mild epidemics of influenza bring a staggering number of rheumatic manifestations in their wake.

We must, in order to intelligently fight against rheumatic infections, carefully study all possible foci of infection. By research and careful clinical observation recognize the child in the pre-rheumatic state. There is a variable time between the occurrence of focal infection and the presence of such manifestations as growing pains, polyarthrititis, chorea, purpura and carditis. During this period the child exhibits many marked symptoms. With further bacteriological and serological research we will be able to prove just how far our little patient has traveled on the road to rheumatic carditis.

The early symptoms of rheumatic infections

are: *Fatigue*, tiredness is always a serious complaint in a child. It should immediately put the physician on his guard. In general it denotes toxemia or possible bacteremia. *Crankiness*, which is the result of the little one's tiredness; our little patient is laboring under a handicap which makes him cross. This is often mistaken for bad manners. *Pallor*, not a true anemia; hemoglobin may be normal but a marked paleness, particularly to the face, possibly a toxic vasomotor phenomenon. *Stationary or actual loss of weight*. These findings together with a slight rise in temperature, particularly during afternoon, and an increase in pulse rate make up the symptom-complex of the early or pre-rheumatic state of rheumatism in childhood. No doubt these symptoms I have just mentioned lead many of you to consider a tubercular infection. Early rheumatic infections simulate very closely the well-known symptoms of tuberculosis. Careful examination of the lung by physical examination and x-ray study and application of tuberculin test will establish the differential diagnosis.

Acute rheumatic polyarthrititis, purpura, rheumatic nodes, chorea are clinical entities with which you are all familiar, and I shall not tax your patience by dealing with them in this paper.

The heart may become involved early, late or at any stage of this generalized infection. Carditis should not be regarded as the end result of rheumatic arthritis or chorea, nor the terminal complication of rheumatic infections.

The very first attack of tonsillitis or other streptococcic infections may result immediately in a typical attack of acute carditis. On the other hand, many patients pass through repeated attacks of infection giving rise to growing pains and arthritis before they succumb to heart infection. The pathology of carditis has been studied in detail and we are all well versed in the classical description of the changes in the mural and valvular endocardium as well as the myocardium itself. Clinically it seems that we must reckon with toxic changes in the heart in order to explain our findings in early carditis. Carditis in children is not ushered in dramatically, but its onset is most insidious. Only by careful routine and repeated examinations is it possible to detect it early. If we are gaged by the time-worn heart findings in examining these hearts,

the diagnosis will not be made until the damage and wreckage of infection present themselves. The symptoms of early carditis are those of the pre-rheumatic state together with a persistent high pulse rate, temperature variations becoming more marked, exhaustion after moderate work and shortness of breath. Various fleeting pains, often referred to as growing pains, are usually elicited upon careful questioning. Abdominal pain of rather vague nature is another common symptom. This may be due to toxic effects on the gastro-intestinal tract but more likely we are dealing with a referred pain from an early pericarditis. Blood examination reveals a secondary anemia. The physical findings in regards to the heart are vague. The apex beat usually is forceful; there is a slight increase in the size of the heart, the action is rapid and a change in the first note at the apex. This change is either of a booming character, comparable to that heard in the "thyroid" heart, or there is a prolongation and a roughness of the first sound. Occasionally we find a friction rub over the base of the heart. The electrocardiograph, by which we may elicit the conductivity of the myocardium and the relative contractive power of the two ventricles, may often give valuable aid. Early carditis will often show an increase in the conduction time.

Careful attention should be given to lymphoid infections, such as tonsillitis, adenoiditis and cervical adenitis. Absolute rest in bed during the acute stage and for several days during convalescence will do much in preventing systemic involvement. All acute febrile conditions, such as scarlet fever, measles, pneumonia and so-called influenzal respiratory infections, demand prolonged convalescence and enforced rest. A detailed inventory of all possible foci must be undertaken before active treatment is instituted. The finding of one focus, such as chronically infected tonsils, should not prevent our further search. We often see a combination of several foci and they must receive their consideration singly as well as collectively. Primary foci are those receiving the infection from the outside world. Secondary foci are reached by way of the blood or lymph system. In any given case of rheumatic infection in a child the focus or foci of which have been determined, we should carefully consider the general state of our patient,

also the presence of any secondary foci. *There must be an opportune, as well as an inopportune, time at which to subject our patient to surgery.* These patients are underweight, hard to manage; their routine management is usually poor. Pathologically, they are in a state of toxemia or bacteremia. The surgical removal of the focus is followed by a loss in weight, possible increase in absorption, *and is not in itself a cure of the condition.* Weighing these patients before and eight days after the operation will show an average loss of two and one-half pounds with a minimum of one-half pound and maximum of eight pounds. Sudden reduction of body weight lowers the resistance and vitality, placing the patient in a most dangerous position. A rigid management before and continued after the operation is of greatest importance. This management consists of a carefully planned schedule as to work, rest and diet. These children cannot be allowed to spend ten or twelve hours at work each day, but how often we find them starting the day at 7:30 in the morning, continuing through school work and hard play until 9:30 at night. No medications, vaccines, sunlight treatments or concentrated vitamins can produce high resistance in a body so overworked and mistreated. The half-day school, lunch at noon and two or three hours' rest in the afternoon have proven of great benefit to many patients during the early stages of rheumatic infection. Under such routine these patients will show a gain in weight, and may I point out that this is of the same importance in the rheumatic patient as we are accustomed to regard increasing weight in the tubercular patient. The child and his parents become accustomed to the rigid schedule of daily life and educated to realize the importance of natural means in recovering health and acquiring resistance to disease. Under this management we find gains of one to three pounds per week. Surgical intervention at this time, with due regard to anesthesia and surgical technic, will insure success in most cases.

The treatment of the early cases of carditis is usually gratifying, but we must here insist upon the most rigid scheme of management. Parents must be told that *rest and time are the most important factors.* Drugs are only complements to the treatment. The physician must clearly explain that the carditis is not a complication

of rheumatic infection; it is only one phase or one of the various organs or tissues affected by this systemic, all-invading infection. With these facts in view, how can anyone expect a cure by the removal of some or all primary foci when the patient also has several secondary foci, such as joint and nerve tissue involvement, and even the heart itself. This is particularly important as clinical experience clearly proves that these secondary foci commonly are the site of acute exacerbations. Absolute rest, both bodily and mentally, is the first and foremost therapeutic measure. We must go further than just prescribing this; we must arrange and supervise the same. Where this cannot be accomplished in the home, I believe institutional care should be resorted to. To further quiet the laboring heart, cold applications over the precordium have proven of great value. Medication should be directed toward the general infection. Salicylates seem to have a beneficial effect, not only upon the general infection but also possessing a sedative action. Where sedatives seem indicated, phenobarbital is most valuable. I do not believe any toxic effect is obtained with either drug in large doses. Digitalis should be thought of last and only used when the action of this drug is most specifically indicated. In prescribing digitalis, one should employ preparations of known strength and follow a definite plan of dosage. Rest in bed should be insisted upon until all acute symptoms have disappeared and prolonged thereafter at least from four to six weeks. This should be followed by light, carefully graded exercises which will have a beneficial influence upon the heart. We should strive for a happy medium between unnecessary prolonged rest and premature over-taxing exercises. When the opportune time presents itself, it is recommendable to deal with any primary foci present with the hope to stem the flow of further infectious material.

May I in closing make the following summary:

1. Rheumatic infection in childhood is a systemic infectious disease, the etiology of which is not clearly understood at the present time.
2. This disease complex has a symptomatology differing vastly from that of rheumatism in adults.
3. The importance of recognizing this dis-

ease early, particularly during the pre-rheumatic stage.

4. Attention and interest should be focused on the general supportive treatment rather than trusting to produce a cure by surgical means alone.

5. Carditis is common in childhood. If recognized early and treated according to a rigid scheme of management, gratifying results are obtained and many patients saved from becoming permanent invalids.

5307 Hyde Park Boulevard.

THE EDUCATIONAL COMMITTEE AND ITS RELATION TO THE COUNTY MEDICAL SOCIETY*

JEAN McARTHUR

CHICAGO

It has been said that the two proper functions of a county medical society are first, education or enlightenment of the public, and second, presentation of programs to keep its members enlightened on the progress of medicine. The Educational Committee has made a very sincere effort to serve county medical societies in developing these two functions. For the purpose of discussion this paper will seek to show the relationship between the component societies and the Educational Committee in these two fields of endeavor.

Education or enlightenment of the public is not a new thing. Many lay organizations had well established health programs and health departments long before the medical society made any attempt to devote time and money to a definitely organized educational project. Women's Clubs, Parent-Teacher Associations, Men's Service Clubs, Elks and Shriners and other groups were giving time for the study of health conditions in their communities. The medical profession was interested in these health activities, but they were not given or did not take the rightful leadership. Lay groups have accused them of lacking cooperation in solving these important health problems. While much of this accusation has been misdirected, we should not blame lay groups too much or judge them too harshly for many of the difficulties and discords which have arisen.

*Read before Secretaries Conferences of Illinois State Medical Society, May 5, 1931, E. St. Louis.

During the past seven years the Educational Committee has tried to overcome some of these misunderstandings and establish mutual interest between lay groups and the medical society. There can be no question but what a certain amount of success has been attained.

We have not sought spectacular methods and programs, but rather have we endeavored to develop and build a solid foundation for a progressive health program.

Doctor Donald Armstrong of Framington, Massachusetts, has said: "It is comparatively easy to arrange a public health campaign which satisfies many of the desires of the people doing the work. It is far more complex to build a plan which will gain the cooperation of the outsiders, who are the very material of the plan, by offering them means to satisfy their underlying instincts. Perhaps the best single solution is to provide for participation."

The Educational Committee has always sought to promote and provide participation by medical men and the laity. The Committee knew from the very beginning that such work could not be successful without the cooperation of physicians as individuals and as organized county societies. It was evidenced that the lay groups welcomed the leadership of the medical society in the field of health education and their interest and cooperation has been developed. With these two divisions before us, the medical men and the laity, the Committee has proceeded to function. One need but to glance at the list of agencies and organizations with which the Committee has had some contact to know that there is need for such a central clearing house. Every year new groups come to the Committee for advice and assistance of one kind or another.

Some of you may think that the Committee has been slow in developing these contacts. We believe that this slowness has made for definite progress and that the foundation constructed will have a distinct bearing on future contacts and success.

Members of the Committee have met with small groups of leaders of these various lay organizations and discussed with them ways and means of smoothing out difficulties and methods of building a sympathetic understanding of a unified program. The Committee in turn has kept the county societies informed of the prog-

ress made through these meetings and has noted that members of the societies can assist materially by developing the contacts. The officers of lay groups have followed the same method in keeping their local groups informed. They, too, are confronted with difficulties, lack of understanding on the part of their local members and the inability to secure sufficient funds to circularize the entire membership. For that reason, we have recommended that local medical societies grant conferences, whenever advisable, with well organized lay groups. We have found a willingness on the part of these clubs and associations to seek medical advice. Their methods have not always been the right ones and we know that the wrong approach has often resulted in disaster. We have continually urged club women and men to confer with their medical men before undertaking any health program or activity. We mention that point in all of our dealings with lay groups. This gives the local physicians an opportunity of becoming the leaders and the authority for health measures in their own communities. Physicians today cannot afford to sit back and wait for these groups to come to them for advice and help. In some cases it is easier to go and offer good will and assistance if needed. No definite goal can ever be reached if we only sit by and do nothing, perhaps criticize a little here and there, but offer no constructive policies to these men and women.

The Committee does not believe that the physicians should be asked to undertake the actual work in carrying out these health projects, but they should have the direction and supervision of them.

There is probably no physician in Illinois who is not aware of the fact that the Illinois Congress of Parents and Teachers is interested in the pre-school child examinations, officially called the "Summer Round-Up." The primary purpose of this campaign is to promote the early detection and correction of defects in the pre-school child. The Educational Committee has told the state officers of the Congress that it believes the proper place for the examination of these children is the office of the family physician and on a fee basis. We have qualified our recommendations, however, with the statement that the method of examination depends upon the local county medical society.

The physician has nothing to lose by cooperation with such a program. He has much to gain. Individual physicians and county medical societies can strengthen their own position as leaders in such health activities in their communities by definite contact with and support of these programs and by keeping informed of the general health education program sponsored by the Educational Committee.

Lay groups are going to continue in the health education field. Big business has entered the field. If the laity is not guided and directed by the medical profession, they will secure aid through other sources. The Educational Committee believes that the physician because of education, training, and experience is particularly fitted for an important part in these health programs.

The Committee offers a certain feeling of security to the physician in the educational work he does as an individual. County societies or members are more willing to take an active part in these health activities when they know they have the support and backing of a committee representing the state society. The individual physician finds it easier to discuss protective health measures with his patients and their families when he knows that men all over the state are doing likewise. Medical men should let the public know what is being done for the benefit of public health. The people should be told that Illinois has a lower infant and maternal mortality rate than many other states which have accepted Sheppard-Towner money. They should know that the physicians of Illinois are interested in and studying the problems of infant and maternal mortality. Let them know, through conversation or public address, that the county medical societies are keeping abreast of the advances in the field of obstetrics and pediatrics. Tell them what the periodic examination of the child offers in future good health and what protection is absolutely guaranteed against certain diseases.

As a Chicago layman says, "We do not know what we want. Part of your job is to sell us on what we want, to educate us so we know what we want, why we want it, and then sell us on the thing."

"Do not simply say it to him, but hold him down and make him see it. Now, in all kindness

do that, not with your fist doubled up, but hold his mind on this thing and tell him stories of people who had that thing and what happened to them. Insist, until you really get them to do the thing."

Medicine need not apologize for offering information about the wonderful accomplishments of its members. The public is interested, but they are going to remain utterly unaware of these facts unless they are told. Show them that you are concerned at the high morbidity and mortality rates in your county. Tell them the reasons for advocating the calling of a physician early in disease. It is very definite fact that the public is extremely conscious of the importance of the periodic health examination and of the early diagnosis of cancer. They want to know that the doctor is also interested in these questions and after an examination, they are not willing to be put off with a few words. Education of the laity, then, requires that physicians be able to answer and participate in discussion of their questions.

During the past year 553 talks have been given before lay groups by members of the Illinois State Medical Society. The physicians of the State have shown their willingness to take care of these many appointments some of which have been scheduled in communities where there are no doctors. There is no doubt but what every physician who took part in one of these programs was helped materially and mentally by meeting with such lay groups regardless of how large or small. No one person could possibly have reached such a large number of groups covering practically every county in the state. Cooperation of the individual physicians with the Committee, then, makes possible the wide circulation of health information in all sections of the State.

No effort has been made to promote meetings through the Committee, but rather our time has been spent in scheduling speakers to address ready made audiences of clubs and in schools. There is still a tremendous amount of work to be done in educating the public to secure its health speakers from proper sources. Here is where the individual physician, the county medical society, and the woman's auxiliary can be of infinite value to the Committee. Let people know that the Illinois State Medical Society maintains a Speaker's Bureau, and that the list

of speakers is carefully selected and kept up to a certain definite standard.

In addition to promoting and advocating the use of a central speakers bureau, there is no reason why the county medical society should not make use of the local newspapers. Editors use material about discoveries in every other field and yet silence is often maintained concerning the important findings of medical scientists which keep our communities healthy and safe places in which to live. In order to help county medical societies make use of newspaper columns, the Committee prepares and censors material suitable for release throughout the state. County societies have been offered this material to be used over the signature of the local county or state medical society. Hundreds of interesting articles are on file in the office of the committee. The material is written in a style readily grasped and understood by the public. At the present time about one hundred papers of Illinois publish this health column daily, semi-weekly, or weekly. The number should be increased and can be through the help of the county medical societies in making contacts with the editors of their local papers. There is no reason why any paper in Illinois should carry a health column prepared by men who are not physicians of standing. In some societies physicians have shown the editors the dangers of such columns and they in turn have welcomed an opportunity of securing, without cost, material which represents the opinions of the entire medical profession rather than the ideas of one individual.

The Committee offers county societies special material to be used when sponsoring diphtheria immunization campaigns, smallpox vaccination, cancer education, and other activities. The committee has often had to depend on a clipping service to bring information of these projects. A much better service could be given if physicians would let the Committee know that these campaigns were contemplated and the material could then be prepared with the viewpoint of that particular community where it is to appear in print.

We have never gone direct to the editors of the papers to make contact for this health column. That has been left to the county society for the policy of the Committee has always been that the county medical society is supreme in

its decision concerning local health matters. Now that you know such a service is offered, will you not make use of it?

In New York each county medical society made a survey of the health activities of its county and the relation of the local profession to them. This no doubt brought to light many conditions which the medical profession did not know existed. Such an investigation would well bear experiment in Illinois. Lay organizations are needed in the county. Their cooperation is welcomed by the physicians. They are valuable for the great educational work they can do, for their influence on public opinion, legislation and laws, and in other ways. But the preventive medicine should be controlled and guided by the medical men of that county.

We hear much today about state medicine. Our college debating teams are taking up the subject, in fact, the Educational Committee has supplied 26 folders of material on this subject to debaters in colleges of Illinois, Indiana and Michigan. Physicians referred some of these students to the Committee. This has been indeed gratifying. Through our package library service, we were able to give these students material showing the dangers of state medicine and from reports we learn that the negative side won in most of the debates.

Thus a conversation here, a public talk there, newsprint and pamphlets, with an eye always open and looking for new fields brings about a better understanding between the medical profession and laity. It is through this type of publicity that the Committee during the last few months has been able to take care of some interesting requests. The Illinois Biology Teachers Association requested an exhibit of material suitable for use in schools, the Illinois Congress of Parents and Teachers asked the Committee to put on a demonstration of the correct procedure of the pre-school child examination at the annual meeting and for the first time in the history of the Congress the Committee had an exhibit, loaned by the American Medical Association, at this meeting. The supervisor of health education in the Oak Park Schools asked for suggestions as to material and methods of promoting health education in the elementary schools.

Several county medical societies have sponsored health campaigns. Winnebago County

carried on a diphtheria immunization campaign and the Committee furnished press material, copies of radio talks, and outlines for talks. This service is available to other county societies. There was a time when the public may have felt that any county medical society conducting such a campaign was seeking business. That idea has been discarded, for with the proper educational campaign the public learns that it is the gainer and in the end the physician is the loser in returns.

There is much to be done in the entire field of public education. The Committee has felt the responsibility of finding the proper methods of disseminating health news. The program has been outlined and has been supported by the county medical societies. It is time for constructive criticism to take the place of any destructive criticism that may have arisen. County medical societies can be assured full support and backing by the Committee in health measures they may wish to undertake.

The second function of the county medical society is to present programs to keep its members enlightened on the progress of medicine. The building of a good scientific program probably rests as much with the secretary as any one. The Educational Committee, however, is in a position to help. Some years ago it was felt that county medical societies needed assistance in securing program material; especially was this true of the smaller and less accessible counties in the state. A group representing the Educational Committee, the Medical Schools of Chicago, the President and Secretary of the State Medical Society and a few others were called together to discuss the situation. As a result of this meeting, the Scientific Service Committee was established as a sub-committee of the Educational Committee. A list of speakers was compiled and has been added to every year until at the present time the entire field of medicine is very well covered, and a representative group of men from Chicago and down state are prepared to go out to present scientific papers. Special sub-committees have been formed from time to time to study special problems of current interest. The committee has not lost sight of the fact that 51 per cent. of all hospital space today is devoted to mental and nervous cases, and is working on a program of neurology and psychi-

atry which will soon be available to county societies. The Committee has encouraged county societies to study those aspects of medicine which were apt to put the doctor in a bad light in the public eye, such as the infant and maternal mortality rate. More meetings were encouraged to present talks on obstetrics and pediatrics.

Today we find an increasing amount of writing and discussion of the subject of cost of medical care and medical economics. The Scientific Service Committee has therefore secured speakers who are willing to present these topics to medical societies. The Committee has not lost cognizance of the importance of local men preparing and presenting papers before their own members, but they desire to schedule these men to give papers before other societies. The Educational Committee has offered the secretaries a press service which will give to all papers of the county and adjoining counties news items of meeting and speakers. These items are interesting to the reading public, not because they may note that their own physician is president, secretary, or holds some office in the society, but because they are glad to know that the medical profession is well organized and active. They are interested in the fact that meetings are held at regular intervals and that scientific programs are given.

The Committee, therefore, is always on the lookout for ways and means of developing educational programs for the public and for the county medical societies. The conduct of this program depends for its success on the support and cooperation given by the individual physicians of Illinois and the organized county medical societies. That relationship is important in developing contacts with lay groups, in promoting a better understanding of the problems and premises belonging to the medical society, and in building a constructive health program in our state.

DISCUSSION

Dr. H. A. Elkins, Mt. Carmel: It is indeed a pleasure to listen to this instructive and timely paper, and being secretary of a small society I can appreciate it all the more. There is nothing I could add to emphasize Miss McArthur's paper, except to reiterate that the medical man's position in the community is really that of the health leader. If he fails in performing that duty, false leaders will arise, and the public in general will suffer thereby. I think we are all interested in putting this campaign before the public. They

will profit by it. If any of you have taken part in these meetings you have seen the interest that is really shown on the part of the public.

In the smaller communities, one of the best ways to put it over is to enlist the aid of the local newspaper. I have found that the newspapers are very much interested. Recently the editor of a paper came to me and said that a patent medicine man wanted space in his paper, and as he was more than anxious to be co-operative with the medical society, he sought our advice. This is just a sample of the interest the county papers have in such work, and I think they can be counted upon for aid in presenting any health programs we may wish to place before the public.

Dr. E. H. Oschner, Chicago: For a number of years the impression has been growing on me more and more that the outstanding accomplishment in medicine of the last decade in the State of Illinois has been the work done by the Educational Committee. I think we have done more in this state in this line than in any other state in the Union, because we have had the untiring services of our president, Dr. Chapman, our president-elect, Dr. Ferguson, our very efficient editor, Dr. Whalen, and Dr. Hutton, and the very able services of our executive secretary, Miss McArthur. I do not think there has been anything done in the State of Illinois that has accomplished so much for the health welfare of the state and for the medical profession in general as the work of this committee. Our scientific papers are all right, but they do not reach the lay people, and if we do not reach them somebody else will. The difficulty has been on account of our fear of appearing as advertisers if we get out in our local communities and attempt to lead them. Under the guidance of the Educational Committee that is eliminated. We can act under the guidance of this committee and not advertise. The work of the Educational Committee has been faithful, unselfish and untiring, and I am glad for an opportunity to publicly express my appreciation of their work, for only too often the people who work the hardest get the least credit.

Dr. R. T. Pettit, Ottawa: I would like to call attention to the assistance we have received from this committee in our work in La Salle County. Last October I was elected president of the La Salle County Medical Society. Up to that time we had held two meetings a year. We have eighty members and there is always a question of getting up a good program and having a representative attendance. Dr. Weld, councilor of the Northern District, suggested that we do what is being done by Winnebago County—invite some of the surrounding county societies to attend our meetings instead of arranging for meetings for our members alone. We arranged to do this and through the help of Miss McArthur, who took charge of the mailing list, we have had a meeting every month during the past year and at no meeting have we had less than fifty men present, and usually over sixty. The meetings have been very successful. She does all the work and the county medical society gets the credit. The service that we have received through her has been very valuable and a great interest is being shown by all the

members, several of whom have said that they felt as though they had never attended a real county society meeting before.

Dr. Harold Swanberg, Quincy: Possibly some of the younger secretaries do not realize the value of these conferences. Of course, the work of the Lay Educational Committee is old stuff to the older secretaries, but we must bear in mind that in the Secretaries' Conference there are many new secretaries every year. It is these men, that must be impressed with the fact that the Educational Committee can be a great aid to their society. I could say the same as Dr. Pettit. We have done the same things, and we have had quite large meetings. We have an annual All-Day Clinical meeting that has an attendance of several hundred physicians. You would be surprised at the large attendance and the distances these men came to attend our meetings. If you request the newspaper publicity, which the Educational Committee can arrange, you can get a large group to attend. They will put on a program for you if you want it. We have not asked for that, but they will do it. I want to second everything that has been said regarding the health columns in newspapers. We find that newspapers are anxious to publish information regarding the activities of physicians and the profession in general. They seek this information. They send representatives to our office after each meeting to find out what has taken place. Through the secretary, this information can be presented to the newspaper in a perfectly dignified manner and worthwhile publicity which reflects the good of the profession, is supplied.

Dr. J. J. Gill, Chicago: I would like to mention one thing which has not been touched upon by any of the speakers so far, and I bring this up as Chairman of the Committee on U. S. P. and N. F. and N. N. R. for the Chicago Medical Society, with which you are familiar. There is one thing by which physicians are doing themselves harm through their own neglect in writing prescriptions. Instead of giving a prescription for a legitimate drug they are prescribing too many proprietary preparations. The patient can read the name on the package and can go to the drug store and get it himself. With a little knowledge of the U. S. Pharmacopeia and N. F., any physician may write a prescription that the laity will not understand and, therefore, will not be able to go and buy it himself. The physician who gives his patient a prescription for a proprietary preparation is hurting himself. In the advertisements today drug houses are offering to send you samples—you hand these to your patients, your patients read the name and the uses and the first thing you know they have the habit of self-medication. My advice is to write your prescription in a legitimate way and save these patients from becoming their own doctors. I shall be glad to explain any of the work which our committee is doing along that line.

Dr. Grace S. Wightman, Chicago: As Health Chairman of the Illinois Federation of Women's Clubs I wish to speak in appreciation of the work of the Educational Committee of the Illinois State Medical Society. We have been in close touch with this work

for a number of years. In fact, I do not know what we should do for our health programs in the Women's Clubs and Parent Teacher Associations if we did not have this help. I think it is impossible to measure the value of this service. Miss McArthur spoke in her paper of medical leadership for lay groups. We believe that the state officers of lay organizations and the officers of the Illinois State Medical Society have very satisfactory understandings and plans, but we do not feel that these have reached the county groups to any worthwhile extent. We are hopeful that medical leadership may be given to county groups where it would be most effective.

Some two or three years ago the officers of the Illinois State Medical Society, the Illinois State Dental Society, the Illinois Federation of Women's Clubs, the Illinois Congress of Parents and Teachers, and the Illinois State Nurses' Association outlined very definite plans for county unit organization in order to give professional leadership to all these organizations; such activities as pre-school examinations, education in maternity and infant hygiene, school health, toxin-antitoxin and smallpox vaccination. This has not been carried to the county organizations as we had hoped it would be. We believe the lay groups are ready for medical leadership. They are asking for it, and it only remains for the County Medical Societies to become active.

By leadership in community health matters we mean that you should initiate, advise and plan with lay groups county studies in various fields, viz., infant death rates, unvaccinated and non-immune children, condition of milk supply, the tuberculosis and cancer problems, etc. Are not all of these matters which should concern the interest of physicians? If not, then within whose province do they lie? What group should study and advise as to their solution? I think Dr. Hall could point out a splendid example of medical leadership in Winnebago County in their toxin-antitoxin campaign. The DeWitt County Medical Society is planning the school health program for their children.

Dr. F. O. Fredrickson, Chicago: I believe the Illinois State Medical Society is to be congratulated on the fact that they have a wonderful educational committee working on our many health educational problems and conducted by Miss McArthur. Miss McArthur spoke about the willingness of lay groups to receive information from the medical profession. Here is a contact that will reach at least eighty thousand people in the state—the American Legion. To show you the importance of this contact, let me say that at the last national convention in Boston, a committee from Congress wished the endorsement of the American Legion for a bill changing the status of the medical men in the Veterans Bureau. This bill would do away with the present organization and adopt a plan that they have in the United States Army—taking young men and placing them in the veterans' hospitals with the rank of lieutenant, captain, etc., under complete army rule. You can readily see with the great building program the United States government has in mind, and the fact that the medical men now in the Veterans'

Bureau would lose their positions and younger men would be placed in control, the tendency would be for the gradual education into institutional medicine, which would be an opening wedge for state medicine.

Fortunately, one of the men, Mr. Hayes of Decatur, turned to a doctor who was present and asked what it was all about, and he answered, "Kill it!" Illinois was the deciding factor in killing this piece of legislation. We have passed a resolution to make contact with about eighty thousand ex-service men, the Legionnaires. A resolution also was passed in the Council of the Chicago Medical Society, a committee was appointed, and there will be a resolution presented to the House of Delegates advocating this contact through the State Medical Society. A resolution will also be presented recommending a new plan of organization with all the medical men in Illinois who are Legionnaires and members of the society.

Miss McArthur said in her paper that the secretaries of the different county societies should establish these contacts with the various lay groups. We are anxious, and Miss McArthur is willing to help. I think it would pay you secretaries to make a visit to the offices of the Educational Committee in Chicago where you may get a great deal of advice as to the best method of making these contacts in your own communities.

Dr. R. O. Stites, Industry: Not long ago I was requested to give a talk on public health before a group of high school students and as I had nothing in preparation, I asked Dr. Hall for his exhibit on what he calls the deplorable smallpox situation in Illinois. I reproduced it on the blackboard and the students seemed very much impressed. I think a good many of these groups understand pictures better, and get more information from them than in the talks we give.

Dr. Andy Hall, Springfield: I wish to call the attention of the secretaries to the fact that, in programs on public health subjects, we have available a number of reels of motion pictures for use from time to time. Any time something of this kind is wanted, if they will let us know we will send to them a reel that is worth while.

FACTORS IN TUBERCULOSIS WHICH MAKE IT A PUBLIC HEALTH PROBLEM*

D. D. MONROE, M. D.

Superintendent, Madison County Sanitarium

EDWARDSVILLE, ILLINOIS

Tuberculosis is not unlike other diseases in that it continues its existence by implantation upon new soil. Since the discovery of unicellular plant life—bacteria—the living body, be it human or other, is recognized as the best possible culture medium. By virtue of its communicability, its insidiousness, its chronicity and its ubiquity, tuberculosis becomes a problem of in-

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terest not only to the individual suffering from it but to those who live in the same home and in the same municipality. That municipality may be a village or a city. Indeed it may be a state or a nation. The greater the population, the greater the problem.

Communicability. That tuberculosis is transmitted from person to person seems proven beyond doubt. Witness—the fact, that children of tuberculous parents are more frequently tuberculous than are children of non-tuberculous parents.

Careful history taking will reveal instances of non-familial transmission. Such was true of Mr. J. who for two years worked at a desk in a railroad office. Adjoining his desk was that of Miss C. who had spent two years curing in one of our neighboring sanatoria. The routing of papers was from Miss C.'s desk to that of Mr. J. At the end of two years we received Mr. J. into our sanatorium for treatment of moderately advanced pulmonary tuberculosis.

Complete or partial breakdown of immunity is brought about by entrance into the body of tubercle bacilli either in massive doses or in frequently repeated small doses. Tubercle bacilli may come from persons or from milk which has not been pasteurized.

Indirect implantation of tubercle bacilli is surrounded by a twilight zone. Many experiments seeking to dissipate the gloom have been done. Floating particles of dust carrying recently dried tubercle bacilli expectorated by some careless spitter must be reckoned as a menace until it is definitely proven that tubercle bacilli are very quickly killed upon separation from their host.

Elicitation of many histories leaves us no wiser as to the source of infection.

Habits of life which lower biological resistance are now recognized as aids to germination and growth of tubercle bacilli in the body. Such are underfeeding (often dignified by the title dieting) scantiness of clothing in inclement weather, over exercise, be it work or play, loss of sleep, intemperance, improper ventilation of living, working and sleeping quarters and lack of sunshine in home, office or shop.

Insidiousness. Tuberculosis makes its initial growth with little or no disturbance of physiological equilibrium. Unless the products of tissue destruction impinge upon nerve structures

little or no pain warns of its presence. There are no prodromal symptoms, per se. At most loss of weight, afternoon fever, persistent cough and fatigue are suggestive. Of these symptoms one or two or three or all may be present. Two events may and frequently do occur to suggest the presence of tuberculosis. One is pleurisy with effusion and the other is pulmonary hemorrhage. Occurrence of either of these should cause the patient to seek his physician post-haste.

One need but cite two examples of insidiousness of onset to warn the unwary. Mr. T., a packer in a wholesale drug house, came to us in 1922 with no other symptom than that of fatigue. The sputum was teeming with tubercle bacilli. Physical examination and roentgenogram proclaimed an advanced tuberculosis with a large cavity in the right upper lobe. He entered the hospital full of hope. He went out six weeks later dead.

Mrs. K. had an attack of pleurisy with effusion in the left chest when she was a girl of twelve. Twenty-nine years later she began having repeated pulmonary hemorrhages. Examination disclosed not only the adhesions remaining from the early pleurisy but a large cavity in the base of the lung as well. There were no symptoms during three decades except inability to recover quickly from colds during the winter season. Pulmonary hemorrhages caused her to seek medical aid.

During the intervening years she married, gave birth to one son and two daughters whom she reared to adulthood.

Chronicity. Unlike acute infectious diseases, tuberculosis does not run its course within a period of a few weeks. Years are required for evolution of tubercle.

Successful therapy is returning to business and professional circles and to homes and clubs many individuals who bear in their bodies the scars of a hard fought battle with a relentless foe. They also carry in their minds knowledge sufficient to so adjust themselves into community life that they will remain a part of it for years to come.

We recall the case of a consulting engineer who is now sixty-five years of age. Forty-four years ago he recovered from pulmonary tuberculosis.

Much knowledge of a practical sort is needed to span more than two scores of years of living.

Knowledge of how to protect others against one's self and knowledge of how to hold the result of treatment.

Ubiquity. Neither age nor sex is immune from tuberculosis. Massiveness of dose and biological resistance alone determine when infection may occur. It is true that the childhood and the adolescent groups suffer most. Intimacy of contact in the home and mass contact in school account for predominance of tuberculosis in these early age groups.

No organ or system in the body is immune from tuberculosis. The fact that the lungs are the favored site for pathological activity strongly suggests that tubercle bacilli enter by way of the respiratory tract. These may be in the cough droplet or the dust of the street mixed with expectorated tubercle bacilli.

Public Health Measures. Ease of communication of tuberculosis requires constant watchfulness of known contacts until they acquire well stabilized immunity. Open cases of tuberculosis are deserving of far more attention than we give them. These need an intensive course of training by both physician and nurse to properly dispose of sputum and to protect others from being infected.

Insidiousness can best be uncovered by careful and constant attention to loss of weight, protracted cough, blood spitting, indigestion and ease of fatigue. This is a significant group of symptoms.

Probably no invalid needs more training than does a tuberculous one. The chronicity of his ailment will either engender self watchfulness or utter disregard for all sanitary rules. The latter places the community at a great disadvantage.

We are apt to regard tuberculosis as a disease of the lungs. It is that and more. It is certain that more attention should be given to the kidneys as sites of tuberculosis infection. We think surgeons recognize this fact more extensively than do those who confine their study to the chest.

To aid in solving public health problems most states have set up by statutory enactment Departments of Public Health. It is the function of such a department to make rules governing migration of tuberculous persons, to compile statistical information reference to tuberculosis, and to issue informative literature on tubercu-

losis. In addition the Department may find it necessary to exercise police authority where rules are disregarded.

Another aid is the clinic which is held as frequently as need be. To this, at the instance of the family physician patients may and do come for a check up.

There remains the greatest of all agencies engaged in spreading information to the public—the physician. He more than others typifies the soldier on the firing line. A word here and word there will in the course of months add materially to his patients' knowledge of tuberculosis.

Education and care should go hand in hand. Indeed were there no educational program our sanatoria, our physicians, our Departments of Health and our clinics would be much less valuable than they are today.

DISCUSSION

Dr. R. W. Dunham, Ottawa: I was very much interested in what Dr. Monroe had to say in connection with the communicability of tuberculosis in the adult. It has been only a comparatively few years ago when it was thought that such a thing was very improbable, but the medical profession of today is gradually coming to realize that it is not altogether impossible for the disease to be transmitted from one adult to another. This is especially true where a member of a family has tuberculosis, and is in intimate contact with other members of the family, eg. husband and wife. On the other hand, when the disease is known to be present and proper precautions are taken, there is very little, if any, danger of transmitting the disease among adults. This is borne out by the fact that surveys made among nurses, working exclusively with tuberculosis patients, and of those doing private duty, or general duty in hospitals, have shown no greater incidence of tuberculosis in the former, than in the latter group.

Tuberculosis is primarily a Public Health problem, chiefly because of its wide spread distribution, its chronicity, and its tendency to cause protracted invalidism. There is practically no phase of modern civilization that tuberculosis does not affect. The mortality and invalidism produced by tuberculosis makes it a national, as well as an international problem. The individual who is ill in the home is a source of direct contact. Generally speaking, the consumptive who has only limited, or no means of support, sooner or later becomes a burden to either private or public charity.

Today we find that tuberculosis is present in practically every corner of the earth. Compare this with the fact that among the aborigines of America and Central Africa, and among the Esquimaux in their native habitat, the disease is practically unknown. However, if the disease is introduced among these people, it develops and runs a rapidly fatal course. Hence,

we may well say that tuberculosis is a disease of civilization.

Living conditions, such as poor sanitation and poor ventilation, being factors which predispose to the development of tuberculosis, bring it into the field of public hygiene. Factories, shops, and all industries, must take the tuberculosis problem under consideration. During the late world war the Army and Navy were directly affected, both before the enlistment of recruits and during actual service. Many recruits were found unfit for service, because they had tuberculosis, and many more developed the disease during and following their service in the Army.

Tuberculosis causes about ten per cent of deaths from all causes. It has its greatest mortality rate between the ages of twenty and forty-five, which is the period of greatest earning capacity and productivity of an individual. The financial loss to this country alone amounts to about two hundred and forty million dollars yearly.

Measures for the prevention of the spread of tuberculosis have been introduced into the statutes of many states and cities, but there is much yet to do done, not only in endeavoring to limit the spread of infective material, but remedy those conditions which have been described as predisposing causes. We cannot say, even today, that the spread of tuberculous infection is any less than it was previous to the time these various preventive measures were introduced. However, the decrease in the mortality rate from tuberculosis is an indisputable fact, and statistics show us that the death rate from tuberculosis has been reduced by more than fifty per cent during the past twenty-five years. This is undoubtedly due to better living conditions in general with the consequent lessening of the factors which predispose to the development of the disease.

Institutions are gradually coming under the control of the Public Health Service as is evidenced by the fact that the building, equipment, and maintenance of sanatoria and hospitals are becoming more and more a public health program.

I should like to say in closing that if the medical profession is to support public health measures in connection with the tuberculosis problem, that they must recognize the importance of lending their co-operation first, to early diagnosis campaigns, because if cases are diagnosed early and cured they are no longer a menace to society. Second, to children's clinics, which enable us to discover the child in contact with an open case, thereby making it possible to isolate either the child or the individual suffering from tuberculosis; also to find the under nourished child, who has become infected, and institute supportive treatment immediately, either in the preventorium, or through the various dispensaries. Third, to advocate the holding of tuberculosis clinics in the various counties, under the auspices of the County Medical Society. Such a program would in my opinion aid materially in gaining greater control of the tuberculosis situation, by virtue of the fact that more cases will be diagnosed at a time when a cure can be effected and greater efficiency developed in locat-

ing and isolating contacts; also in treating the child who is suffering from tuberculosis infection.

Dr. A. A. Crooks, Peoria: I should have liked Dr. Dunham and also Dr. Monroe to have elaborated more particularly on the phase of early childhood diagnosis, that particular aspect of diagnosis which, in my opinion, is the only other avenue left for us to reduce the incidence of tuberculosis, and of course in recognition of it—reduce our mortality, that is, the recognition of tuberculosis in the child. In this phase of the early diagnosis campaign we are not getting anywhere very fast. You gentlemen who specialize in this particular field possibly will agree with me when I say that the incidence of tuberculosis in the past comparatively few years has not been reduced materially, and it is further my opinion that if we are to reduce the incidence, and thereby reduce mortality, the child must be our battle ground hence forth, because it is in the child of known gland tuberculous infection that our pulmonary type is recruited in later life.

Everybody here, or the majority of us, are engaged in public health activities and we ought to put our shoulder to the wheel and further aid the National Tuberculosis Association. It is being done sporadically. There is in some instances, particularly in Massachusetts, very pleasing work being accomplished and it is being done in a small way sporadically in other places. In the city that I serve, I am finding it extremely difficult, even with all the propaganda that has been put forward to get the people, even in this day of enlightenment, keyed up to the necessity of early recognition of tuberculosis, particularly in children, that we may save them. We are unfortunate in the city I serve that we have only five open window rooms in the school system. We are, however, developing another one this coming September, and the hue and cry of parenthood and the newspapers of Peoria is that there be open window rooms established in every school.

Another phase of remissness in the preventive care that has been borne in on me so repeatedly is where we take a child in the grade school and coddle him along in our open window rooms and seemingly get complete arrest; he is graduated from the eighth grade and goes to high school, and we, in common with other large cities, are not carrying on in the high schools because we have no open window rooms in our high schools as yet. So, too many that we have been able to benefit during the grade school period have gone into their post adolescent period during the junior year in high school with an active pulmonary tuberculosis. This particular field, it seems to me, is so virgin; hardly the surface having been touched. It would be my appeal to everybody here to actively interest the counties they serve in a widespread diagnostic campaign. There may be some of you, and no doubt there are some of you here, who would say that the skin test is of no particular importance. That particular objection is not borne out by my own personal experience. In a group way, I feel the first line of contact would be the skin test in the pupils of your grade schools who are able to get the consent of the parents. Now whether

this is done through your physician or whether it is done in the clinic with your physicians asked to be present to give the skin test, I think, is not so material, so long as it has the approbation of your county medical society.

So, I think the prime thing is in our early recognition of tuberculosis, particularly in childhood tuberculosis.

Dr. Arlington Ailes, La Salle: I just want to add a few words on the infectivity of this disease. Recently I took a tour under the auspices of the Rockefeller Foundation to study some procedures in tuberculosis work that was going on. In Kingsport, Tenn., they are putting on a special study under the auspices of the Julius Rosenwald Fund and the State Health Department. They have in their unit, making the study, an epidemiologist, two clinicians, a nurse and a clerk. They told me there of the case of a man who was supposed to have chronic bronchitis, but who evidently had the chronic fibrous type of tuberculosis, and who started a barber shop. In a short time two employees working near him became infected with a rather acute type of the disease. Later this man closed his shop and opened a beauty parlor, in which his sister and another lady worked, and I understand that both of these came down with the disease before they got the man into the clinic and made a diagnosis of tuberculosis. This is another story of the infectivity of this disease, and it is apparent that we may have a great many chronic tuberculous people with a diagnosis of chronic bronchitis, who live for years spreading their disease.

Now they found in their study at Kingsport that 60% of the school children from 6 years to 15 years of age gave a positive intradermal test for tuberculosis. In following up these positive school children, they were able to find in about 90% an adult case in the home or among close associates. These cases were frequently these chronic fibro-caseous types of tuberculosis that were regarded as chronic bronchitis.

Now Kingsport is an industrial community that has been built up in very recent years. They have a lot of natural resources down there, which induced monied men to come and start a city. One of their inducements, I think, was cheap labor furnished by the mountain people of the region. These people flocked in there, and thus were suddenly transferred from an open air mountainous life to a more or less indoor industrial one. While the company-owned industrial homes looked nice on the outside, I am told that insanitary conditions frequently prevailed inside, and that often there were two families to a home and the beds were sometimes occupied 24 hours out of the day. This could happen where there was night and day employment. Tennessee has more tuberculosis than any other state in the Union, if the transients of Colorado and Arizona are excluded. So you can figure that they must have a lot of tuberculosis. At Kingsport they have more tuberculosis among the whites than among the colored; approximately 90% of whites to 80% of the colored showing a positive tuberculin test. Of course their colored population work as gardeners,

janitors, etc., while the whites work in the factories and come from the type of population I told you about. The factories in Kingsport, I believe, are said not to be particularly hazardous for tuberculosis. Here is an example of this infectivity. They had examined nearly 2,000 of the population when I was there, and if I remember rightly had found twenty-one active and suspicious cases per reported death.

When I got up to Cattaraugus county, N. Y., I found a different type of population. There the Milbank Foundation is putting on a special study of tuberculosis in a few rural townships around Ellicottville, a little village of about 700 population. There the death rate from tuberculosis is low, being about 30 per 100,000 population, and there they were finding only about 10% of the children positive to the tuberculin test. So this is another evidence of the infectivity of this disease. Where there is a high tuberculosis death rate there is a high infectivity rate among the children. Now since these positive children give us leads to so many cases in the homes or among close associates, it appears logical, as the doctors have pointed out, that the place to begin is in the school with the tuberculin test, followed by an x-ray of the positive cases.

I would like to ask the essayist and discussant a question as to the practicability of treating in the homes, these cases of childhood tuberculosis which we might find. Somewhere I have acquired the notion that nature is kind to these children, and that if you give them half a chance, almost one hundred per cent will get well. Is it practical then by finding these cases in the school, letting the parents know about it, lessening their studies, regulating their lives, giving them more hours in bed, and seeing that they have plenty of good food and fresh air, to cure these cases at home?

If these unhealed cases of the glandular type can go over into adolescence and adulthood, and become the adult type by infecting the parenchyma of the lungs, and we can cure them by early diagnosis and home treatment, then it looks like we will begin to have, at least, a partial solution of our tuberculosis problem, because then we will be able to prevent a lot of cases going over into the adult type to infect or reinfect others.

At the Phipps Institute in Philadelphia they showed us another example of how to get the early cases. They were inviting certain groups of people, such as classes of students, to come to the Institute for an x-ray of their chests, without regard to symptoms, and they were finding a small percentage with latent pulmonary tuberculosis. I was much impressed as Dr. McPhredran was showing two x-ray films to a big strapping young law student, who was denying the possibility of himself being infected. Dr. McPhredran said to him in substance, "Here is your film six months ago and here is the shadow in the apex, and here is the film we took of you yesterday. The reason that I asked you to come back is, that the recent film shows definite advancement. Now is the time for you to get under proper supervision and be cured, but if you wait for further advancement of this disease, or until intoxication begins and you have appreciable symptoms,

then you will have to go to bed and make a long fight for recovery."

So it looks like we should, if possible, go into the schools and high schools and make the tuberculin tests, and x-ray the chests of the reactors, and get them under the supervision of the family physician for whatever care he may be able to secure for them. Certainly if this work was done on a large scale the home would have to be the place of supervision, as only a small percentage could be given institutional care. Finally all that are positive to the tuberculin test should be intensively followed up to determine the source. Then these adult cases which would be found, should be gotten under supervision to prevent infection and re-infection of others.

Dr. Monroe, in closing: I want to thank Dr. Dunham for his discussion of the paper. I believe there is a ray of light in the solution of the tuberculosis problem. The bovine type of tuberculosis, a source of infection of children, is rapidly disappearing in the State of Illinois. We have left then the human type of infection and the avian type. For our purpose, we might disregard the avian type and say that only the open case of tuberculosis in Illinois is the source of infection. Now just what to do with the open case of tuberculosis is the real problem and the crux of the whole situation. I think our principal trouble is that we have treated tuberculosis very much like we treat a great many other of reforms—soon as we put the thing over, or think we have done so, we promptly forget it. A reduction of mortality of fifty per cent in the last twenty-five years brought about a cessation of activities among physicians especially. I feel that we are more to blame than anybody else in this country for being in the doldrums as to tuberculosis at the present time. Right in my very county which adjoins St. Clair, we built a sanitarium that cost two hundred and fifty thousand dollars. The building opened; a hundred doctors in Madison County said, "We have solved it. Now let's do something else."

We are learning that the problem is not solved. Some of the patients who were taken to that sanitarium are open cases and they may go back to their communities a source of infection. We have also found that for every tuberculosis death there are ten patients living somewhere in that same county who are actively tuberculous. I believe we never will solve this thing until we know what to do with the open cases. A child with the glandular type of tuberculosis will not infect any body. It is the open case, the chronic, who is frequently unrecognized that is the source of all the trouble.

Now as to the method of building up these children who are known to be tuberculous. Dr. Crooks has brought out the matter of the school and the open window. This is a method of real progress. It is the preventorium plan of treatment. We are happy if we can incarcerate the tubercle bacilli within the lymph nodes of the chest and keep them there and that seems to be a feasible thing.

We have in our own sanitarium at the present time thirteen children. We take them in there in spite of

the fact that there are adults in that sanitarium. We send these children out in much better condition than we get them because, if a sanitarium is to prove its worth in any place, it certainly does prove it when children and adults are treated in the same building. We do not put children and adults in the same room; they are kept in their respective rooms and are much better isolated in our sanitarium than they are in other places in the whole country, be it the church, Sunday school, public schools, moving picture shows or what not. We take these children and train them. We feel that these children are to be our messengers and our missionaries in time to come, and that our work really must be done with the children from an educational standpoint.

There are two tests, the von Pirquet and the Mantoux that seem to be giving us some very definite information.

Within two or three days from now several of us will be on our way to Syracuse, New York, to attend the coming meeting of the National Tuberculosis Association. I rather think that the American Sanitarium Association will go on record as favoring for suspected tuberculosis the use of these two tests. If they prove positive, then the x-ray will be used further to confirm the suspicion of the presence of tuberculosis. After that is done, it is entirely a method of treatment and we can get just as much treatment as we are willing to pay for.

SEMINAL VESICLE INFECTION

ANDREW McNALLY, B. S., M. D.

Assistant Urologist, St. Lukes Hospital

CHICAGO

Seminal vesicle infections are of considerable interest and importance to both general practitioner and urologist. Because of the frequency of occurrence, the difficulty of cure, the possibility of sterility and the economic loss to the patient, cases of this type are of particular importance. It is the purpose of this paper to make the clinical picture and the treatment of this condition clear in the minds of practitioners who encounter it infrequently.

Various authors have estimated that seminal vesiculitis occurs in from 10 to 90 per cent of all cases of gonorrhea. While the great majority of vesicle infections occur as complications of gonorrhea, there are many cases of infection with the ordinary cocci or bacilli following instrumentation, sexual excesses or from foci of infection, i. e. teeth, tonsils, intestine, etc. The great difference in percentage of occurrence may be explained by the fact that many infections are silent ones and are not discovered unless

looked for by examination of the expressed secretion.

In speaking of seminal vesiculitis we should more properly term the condition a prostatovesiculitis as the infection occurs concurrently in prostate and seminal vesicles. However, in many cases one or the other is more involved as is easily discovered by rectal touch.

It may be well to speak here of the prevention of this distressing complication. As a great majority of cases of gonorrhea are complicated by prostatovesiculitis, it is during the treatment of the gonorrhea that care must be taken to prevent its occurrence. If the treatment consists mainly of injections of the silver protein salts by the patient himself, he must be thoroughly instructed so that great gentleness is his byword. He must be warned against having sexual excitement or indulging in alcoholic drinks. The physician must also use great gentleness in his personal treatment of the patient. If the treatment is by irrigation, low pressure must be used i. e. the fluid level not higher than one foot above the urethra and the urethra cleansed by allowing the fluid to flow gently in and out.

The pathology is that of an acute inflammation of the gland with the walls infiltrated and thickened and matted to the surrounding perivesical tissues—a perivesiculitis. Because of its complicated structure, the lumen is dilated in places and in others contracted by stricture formation. Abscess formation is very rare. The infection is always bilateral and always associated with infection of the prostate of varying degree.

The symptomatology of vesiculitis is varied but may be briefly considered under the following groups: local symptoms comprising pain or a feeling of fullness in the rectum, dragging perineal pain, frequency and burning on urination amounting at times almost to complete retention and urethral discharge. In chronic cases the typical morning drop is present.

Referred symptoms are low back pain and testicular pain so typical of seminal vesicle disturbance. Vesicular colic usually occurring at night often simulates typical renal colic and at times is very difficult to differentiate.

Metastatic symptoms include the many and varying joint pains which are common complaints.

Sexual symptoms in acute inflammation may

consist of hemosperm with pain during coitus or on ejaculation. In chronic inflammatory disease, loss of erections and ejaculatio precox, are the complaints. There may be any grouping of the above and none of the symptoms taken alone are typical of prostatovesiculitis.

No account of seminal vesicle infection is complete if epididymitis, its common complication, is not mentioned. When the epididymitis is acute the vesicle will usually be infiltrated and tender. Chronic relapsing epididymitis may be associated with chronic vesiculitis. In any case of suspected prostatic and vesicular infection, the first massage should be nothing more than gentle stroking to prevent stirring up latent infection and producing epididymitis.

Usually the diagnosis is simple. Given a history of a previous gonorrhea, especially with complications, with presence of one or more of the previously mentioned symptoms and typically the morning drop, suspicion of a seminal vesicle infection is at once aroused. The absolute diagnosis is made by finding pus in the secretion obtained by massage. The diseased vesicle is often palpable, indurated and sensitive to palpation although a definitely diseased vesicle may not be palpable. The multiple glass test is of value at times to determine which prostatic lobe or vesicle is more seriously involved. The patient can fill his bladder by forcing fluids or it can be filled with warm boric solution before the examination. He then voids small portions of the retained fluid into two glasses. Then the prostatic lobes and vesicles are massaged separately with small portions of urine or solution voided into separate containers after each massage. The urine will be more cloudy and pus will be found in the glass following massage of the organ chiefly involved. In the complete diagnosis it may be desired to determine the type of infection, particularly the presence of the gonococcus. This may be done by stain, methylene blue or gram, and by culture of the secretion obtained by massage. However, in the routine treatment this is not necessary.

The treatment in the acute stage consists of rest in bed with relaxation of the parts by rectal suppository of morphine or morphine by mouth. If the vesiculitis is a complication of gonorrhea, all local treatment is stopped during the acute stage. Perineal heat is comforting and the acute urinary symptoms may be relieved by hyocyanus

and citrate mixtures. The diet should be soft and fluids may be liberal if the urinary symptoms are not severe. If, however, there is marked frequency and burning on urination, the intake should be just sufficient to satisfy thirst. The temperature can be controlled with aspirin and tepid sponges. The scrotum is supported to prevent, if possible, the development of an epididymitis. After the acute process has been relieved, the inflammation may be attacked by local heat through sitz baths and hot rectal douches. We prefer to allow hot water of 105°-110° F. in repeated small amounts and held in the rectum for a short while, to the psychrophore. Some urologists prefer a two way tube so that a continuous stream of hot water is constantly flowing into and out of the rectum. Massage of the prostate and vesicles should be started very gently and repeated once, or at the most twice, a week. It is best to follow a definite routine in the massage of the prostate and vesicles starting first by emptying the vesicles by a few strokes beginning at the tip of the vesicle and following its course to the juncture of the prostate in a continuous stroke. After the vesicles have been massaged, each lobe of the prostate is expressed by a number of vertical strokes with the massaging finger starting at the outer border and working inward toward the urethra. Lastly, the urethra is emptied of the expressed secretion by one stroke.

In many cases the examining finger will be unable to reach the upper portions of the vesicles in which case the use of a massage iron is indicated. In every case the massage should be thoroughly and firmly done but in no case with great strength or roughness. Massage is our chief therapeutic agent in subacute and chronic prostatitis-vesiculitis. It must be done regularly over long periods of time with suitable intervals of rest. Each massage can be followed by an urethral instillation of argyrol or by an irrigation. Regular normal sex life is absolutely necessary in chronic cases, the difficulty being to determine the normal for the individual although it is safe to advise intercourse only two or three times a week, and not prolonged. Non-specific protein therapy is of value in this stage using any variety of milk proteins which are on the market or if the patient is under close supervision, intramuscular injections of boiled milk or intravenous typhoid vaccine may be used.

Neosalvarsan injections have been used in resistant cases by a few urologists. Catheterization of the ejaculatory ducts through the urethroscope and injections of various mild antiseptics may be tried by those with sufficient skill although rarely done by most urologists. A new instrument recently devised by McCarthy for ejaculatory duct catheterization will probably increase the popularity of this mode of treatment. New forms of treatment by general or local vaccination using gonococcus antiviral or the toxin of the gonococcus is still in the experimental stage. Belfield's operation of injection of mild antiseptics, chiefly the silver proteins, into the vesicles through the vas deferens which is reached by a small incision in the scrotum, is not considered of value by the majority of urologists. Vesiculectomy for simple infection is rarely done.

Before discharging the patient the urethra must be calibrated for stricture, which, if present, must be dilated. If the prostatitis-vesiculitis is a complication of a recent gonorrhea, provocative measures must be carried out to determine cure; i. e. silver nitrate instillations, sounds, gonococcus vaccine, etc.

55 East Washington Street.

TUBERCULOSIS UNDER GOVERNMENT CONTROL

JOHN PETERS, M. D.

Assistant Clinical Professor, Loyola University

MAYWOOD, ILL.

Thousands of books have been written on the history of preventive medicine; also, on the splendid work the United States Government did in eliminating typhoid fever that made possible the Panama Canal District, by first making the place fit to live in. Yellow fever was reduced to a minimum. Smallpox, which swept Europe, opening millions of graves, is reduced to a minimum on the mortality list. Diphtheria, which has claimed millions of innocent children as well as adults, has been brought down to a very small percentage. In fact, it should be considered a criminal act to permit anyone to die from this disease with our present knowledge of treating these cases.

There is one disease that still claims millions of victims annually with hundreds of thousands of deaths each year, with the economic loss of

billions of dollars to our country and one that still defies the scientific world, and that is the white plague, or tuberculosis.

Tuberculosis has existed in man as far back as history can be traced. The Greeks were familiar with it; so were the Egyptians and it has been proven without a doubt that it existed long before the Hebrews; and tuberculosis exists yet!

It is universal in all countries and makes no distinctions. It takes the rich as well as the poor; the educated and the ignorant; men, women and children, beginning in their cradles and staying to senility, and is responsible for one in every ten deaths. Ninety per cent of the population of the world have had or have tuberculosis in a dormant or active form and the dormant type is more likely to become active than the active to become dormant. It destroys the youth of our Country; it takes fathers from their families and mothers from their children. More people have been lost from tuberculosis than from all the wars combined.

What is being done to combat this disease? What are the great universities doing towards it? Where are those philanthropists who are donating millions of dollars for pecuniary purposes or the medical men who practice medicine for commercial purposes; or those great nations that are spending billions of dollars for experiments in building war destructive materials? Many scientific men have wasted and wrecked their lives in the search for cures to make it possible for others to live, and yet we are not any nearer than the early Hebrews.

Are we to sit back and throw up our hands in hopeless despair or are we to continue to search for a cure? Just as the problems of other diseases have been solved, so could they be with tuberculosis. It takes money and trained men or armies of trained men with ample facilities to make it possible for them to save the human race.

Science is built upon facts and the greater number of our people are enjoying the benefits of scientific discoveries. In this great civilized world of ours, we have developed a new type of genius of the obstructive type and many organizations of "antis" who, from various points, attack and assault the scientific martyrs, which is all due to lack of education and ignorance. Among them are organizations such as the

Medical League, Anti-Vivisectionists, the Anti-Evolutionists, of which one of our great public speakers was a member. In this group are many physicians who commercialize medicine with the combination of various cults of quackery. All of these men come out of their nests as opposing forces with systematized ignorance wherever the scientific facts are to be presented for the welfare of the people.

Tuberculosis is a destructive, hopeless and fearless disease and just for the last few years has been frequently attacked but not conquered. The germs that are invisible to the naked eye are still a mystery to the human intelligent brain. Were it not for the fact that we are building natural resistance against tuberculosis by active immunity, the entire race would have been destroyed.

Observations made on autopsies, and tuberculosis tests made during life, have proven that very few who reach adolescence have escaped this dreadful disease. We may safely say that ninety per cent of all people living have had or have tuberculosis when they reach adult life. One hundred thousand persons die yearly in this country from this disease and about 1,000,000 people suffer from this disease in the active form and those that have the dormant type of tuberculosis might flare at any time, just as dormant volcanoes.

The early recognition of pulmonary tuberculosis is enthusiastically advocated. Yet, we do not know how frequently it is possible with such a wide difference of opinion concerning the methods that are most effective.

Among our recent methods of treatment is the air and rest cure. It has had its test of time. It must be admitted that the proportion of cases that can be restored to health, after all, is very small. The most reliable statistics prove that the lasting, satisfactory cures are scarce and the death rate of persons having had tuberculosis remains very high. We all know that if we have nothing else to offer our tuberculosis patients but the air and rest cure, we have nothing to boast about for the incipient cases only derive the greatest benefit by this method.

As to the immunological methods, it certainly has not stood the test of time and those who claim cures by tuberculosis vaccines are suffering from delusions. After a period of twenty years experimenting with a hundred thousand tuber-

culosis patients with vaccines, its adherent followers have abandoned its use and claim a very small percentage of help even in the incipient form of disease.

Let us consider for a few moments the chemotherapy methods. Quite a few workers have been busy in the past few years with new ideas using various compounds such as copper, gold and other metals; the various oils such as cod liver oil or chaulmugra and its derivatives, concerning which nothing definite has been brought to light. A temporary ray of hope came from Denmark in the use of a compound called sanocrysin. It has been tried under all conditions with all necessary precautions and in many countries by the greatest leaders in the medical profession. They have reported disappointments; consequently, its use has been abandoned.

And now a few words for artificial collapse, which is the greatest and most dependable in the recent advances of science and in treating tuberculosis. It is capable of abating most of the alarming symptoms and restoring those suffering from the active form of disease to a fairly normal state of health. At first, it could be applied only in a very small percentage of cases but the proportion has increased to a considerable degree and it is still on the increase due to the advancement in technique, interpretation of the Roentgen plates and our greater familiarity with the disease itself. Yet, it is not always successful.

Thoracoplasty, or its substitute, pneumothorax, has not proven its value and should be considered as such.

Truthfully speaking, there is no last or specific word in the treatment of pulmonary tuberculosis but we have a right to expect greater benefit from our most recent advance in the treatment of these conditions and we do know that in order to conquer tuberculosis, much more is needed than our present knowledge and methods of treating the human curse.

One of the first steps to be initiated would be the adoption of a plan of organization that would bring all the tuberculosis cases under the control of our government with established sanitariums for incipient patients, and hospitals for the advanced and hopeless cases, who cannot be cared for safely at their homes, thereby isolating fairly successfully those individuals who are consequently a menace to society. These various

institutions should hold frequent meetings and report their progress in the research and treatment of this disease.

The Government should employ armies of trained men who are well equipped to carry on this research. They should furnish schools and make it possible for anyone who is willing to receive instructions in the diagnosis and treatment of tuberculosis, as it takes years of training to develop leaders in any profession, especially in the work of tuberculosis.

At the present time, there are insufficient beds in the sanitariums and hospitals. Dispensaries are few and scattered and the doctors are not sufficiently trained to recognize early tuberculosis, and as a result, only moderately advanced cases are admitted to tuberculosis institutions and in some instances, it requires political influence as the waiting lists are so great.

The government should employ educators to be sent out from these various institutions to educate the public as to the importance of recognizing and treating early tuberculosis. We know that education has been extremely limited and the various organizations have not sufficient funds to carry on the work satisfactorily.

There are organizations who send trained speakers to the various groups of business men to educate the public how to improve their business methods and their environment. It is just as important, if only from a business standpoint, to carry on the same campaign in the education of tuberculosis which is by far financially more expensive to the human race than any other business problem.

We incarcerate the mental cases; also, the criminals, who are a menace to society for fear that bodily harm may result by their freedom. Yet, the active tuberculosis who is the greatest menace to health and life, is permitted to be at large without taking the most strenuous and precautionary means for its abatement. Is it because the majority of the people do not understand the curse of this dreadful disease?

The government and state do not hesitate to spend millions of dollars for various improvements such as bridges, concrete roads and enforcement of prohibition or monuments to political heroes. Our philanthropists build museums and planetariums which are by far less important and if this relentless disease is not checked, all places of amusement and conven-

ences will not be of great benefit to the human race.

23 North 5th Avenue.

PATHOLOGIC AND PHYSIOLOGIC DEATH

EDWARD PODOLSKY, M.D.

BROOKLYN, N. Y.

Death presents perhaps the greatest mystery in the experience of mankind. It has ever been regarded with awe from the earliest times. Yet death is not so great a mystery when viewed in its true biological status. It is a supreme necessity in the present scheme of all life.

Death is the natural incident to evolution and because death has continuously eliminated the lesser forms of life the more complex have been possible. Had nature been satisfied with the monera as the final manifestation of life, the monera would have been immortal. But the monera was only the beginning of a means to an end, and through countless aeons it has evolved to more and more complex organisms, none of which, apparently, was the desired ultimatum in vital manifestation. Man, no doubt, is the most perfect product in the evolutionary scale at the present time, but he is not that perfect organism toward which nature has been striving. His role on the evolutionary process is, no doubt, much more glorified than the ape's, but he is by no means, the perfect organism. It is therefore, a vain attempt for mankind to attempt a permanent elimination of death. He must be willing to accept death as a thing naturally inherent in him.

There was a time on earth when there was no death, and that was prior to the appearance of living organisms and the advent of evolution. The ideal conception would be of a long period that followed, and which was characterized by an evolution of the simplest conceivable organism to the most complex and perfect, after which the evolutionary process shall cease, and with it, death. How long that period of evolution will be can never be known. Yet the perfect must some time be reached. This perfect organism will be the ultimate of ultmata in nature's striving for the perfect form. Its perfectness will constitute its deathlessness, and because it will be *the* perfect organism, there will be no need

for it to die, for the evolution of life will have come to its final standstill.

It is, indeed, wonderful to speculate upon an organism so perfect that it is deathless, in view of the fact that the present expression of life is so imperfect that death in infinite variety so readily terminates it. The question of what life is has never been answered because it is apparently harder to define that which is incomplete and imperfect than it is to define something which is perfect. It is obvious, therefore, that the final definition of life will be possible only when the perfect expression of life makes its advent. How hopeless it is to define life at present is admitted by the fact that life is defined most completely in terms of death. The French encyclopedists of the 18th century defined life as that which resists death. This is by far the most complete definition in view of the fact that the perfect living form will effectively resist death. Dr. Roswell Park (*Journ. A. M. A.*, vol. lviii, no. 17, April 27, 1912) has shown the hopelessness which confronts the modern investigator in attempting a definition of life:

"After death, the majority of cells in the previous living organism live on for hours, or for days, or under certain favoring circumstances retain potentialities of life for indefinite periods. Life does not inhere in any particular cell. Cells are capable of stimulated activity long after the death of their host. In fact, by suitable electrical stimuli, nearly all the phenomena of life may be produced saved consciousness and mentality alone. Do these then constitute life? Then, what of a trance or absolute imbecility? If life inheres in the brain, then what of the acephalous monster who lives for a short time after birth, or of the decapitated frog who lives for several hours? Is it then in the heart?

"If protoplasm be alive, then life inheres in the nitrogen compounds composing it, or else in an adjunct of matter, impenetrable, elusive, if undeniable. The life of a cell is necessarily quite distinct from the life of its host, nor can the latter be composed simply of the total numerical lives of its components.

"Some lower animals bear semi-divisions, in which case each half becomes complete by itself. The more highly specialized or complex the cell, the more easily does it part with life; the more difficult is its preservation. We may assume that, after the death of a man, the most specialized cells are the first to die; or more, that their death precedes his own. In the ante-mortem collapse seen in many diseases and poisonings, has not this very thing occurred? The patient has outlived his most important cells. Twenty per cent. of the cells are actually dead; the rest are bathed in a poisonous medium. Still he endures yet a little while."

Death, on the other hand, is somewhat easier

to define, because death in itself is complete and final. Of course, it is the hope of those who look optimistically upon the efforts of nature to arrive at her perfect living form that it will become increasingly easier to define life, and that the manifestations of death will ever become vaguer. At present, however, death is very real, more real than life, and its definition is therefore rather complete.

Death is a condition which begins at the moment when the mathematically harmonious and co-ordinating activity existing among the vital centers of the organism is completely disturbed. The essential cause of death is this complete disturbance, but in its nature it is twofold, there being that death which is pathologic (unnatural) and that which is physiologic (natural).

Pathologic death presents the greater problem, because it is so infinite in number and variety. Fundamentally, however, pathologic death is of three kinds: 1. mechanical death; 2. chemical death; 3. abnormal degenerative death. Mechanical death is brought about by a mechanical injury to the vital system, such as mechanical crushing of the organism. Chemical death is brought about by a chemical reaction or set of chemical reactions within the organism, producing a condition incompatible with the co-ordinating activity of the vital center. In such a case there is a substitution of the poison for the colloidal substance in the tissue. Thus in the case of poisoning by arsenic, each molecule of the poison substitutes itself for at least six molecules of ionized water of the tissues. The tissues, thus deprived of their normal chemical constituency, are powerless to function normally and if this condition be allowed to progress, death will ensue. Abnormal degenerative death is death brought about by the stimulated activity on the part of the conjunctive cells over the specialized cells. This is usually caused by disease with its toxins or the introduction into the system of poisons which are the factors of stimulation.

In the majority of cases pathologic death is scarcely ever purely a mechanical or chemical death. More often it is a combination of both, or in some cases of all three. The primary variations are: 1. mechanico-chemical; 2. chemico-mechanical; 3. mechanico-degenerative; 4. degenerative-chemical; 5. chemico-degenerative; 6. degenerative-mechanical. A mechanico-chem-

ical death is death brought about by a mixed mechanical and chemical disturbance of the vital activity of which the mechanical cause predominates over the chemical one. In the same way we may define the other five of this primary variation.

The secondary variation consists of: 1. mechanico-chemico-degenerative; 2. chemico-mechanico-degenerative; 3. degenerative-chemico-mechanical; 4. degenerative-mechanico-chemical; 5. mechanico-degenerative-chemical; 6. chemico-degenerative-mechanical. A mechanico-chemico-degenerative death is death brought about by a disturbance of the vital activity, partaking of every one of the three natures of pathologic death, and in a proportion in which the mechanical predominates over the chemical, which in turn, predominates over the degenerative cause. Similarly, the remaining five of this final variation may be defined.

Pathologic death, which is so varied, may thus be conveniently classified. It is by far the more common of the two, and the majority of living organisms come to their death pathologically. While there may be some faint hope of eradicating physiologic death, pathologic death can never be effectively resisted by man.

Physiologic, or natural death, is the incidental result of cellular differentiation. Weismann's view on the advent of physiologic death is of some interest and importance:

"1. Natural death occurs only among multicellular beings; it is not found among unicellular organisms. The process of encystment in the latter is by no means comparable with death.

"2. Natural death first appears among the lowest heteroplastid metazoa, in the limitation of all the cells collecting to one generation, and of the somatic or body cells proper to a restricted period; the somatic cells afterwards in the higher metazoa came to the last several and even many generations, and life was lengthened to a corresponding degree.

"3. This limitation went hand in hand with a differentiation of the cells of the organism into reproductive and somatic cells, in accordance with the principle of division of labor. This differentiation took place by the operation of natural selection.

"4. The fundamental biogenetic law applies only to the multicellular beings; it does not apply to the unicellular forms of life. This depends, on the other hand, upon the mode of reproduction by fission which obtains among the monoplastids (unicellular organisms), and, on the other, upon the necessity induced by sexual reproduction for the maintenance of the uni-

cellular stage in the development of the polyplastids (multicellular organisms).

"5. Death itself, and the longer or shorter duration of life, both depend entirely upon adaptation. Death is not an essential attribute of living matter; it is not necessarily associated with reproduction, nor is it a necessary consequence of it." *Essays Upon Heredity*, vol. I, pp. 160-161.

Exactly what is the process of physiologic death in a highly specialized individual? There are several ways in which this process may be viewed. There begins, from the day of birth of the complex organism, a struggle between the primitive and specialized cells, and this continues throughout life. Disease, poisons, or tissue traumata may cause an overactivity of the primitive element (conjunctive cells) and hasten death, which in such a case will be pathologic. On the other hand, if there is an absence of abnormal excitation of the conjunctive cells and they continue to triumph over the specialized cells in a normal manner, physiologic death will result.

This activity of the primitive element tends to bring back all to a primitive condition, where each cell was sufficient unto itself. But the highly specialized organism is one where all are co-ordinated, and this leveling process is fatal. The conjunctive cells replacing the highly specialized ones are in no way capable of carrying out the highly organized and co-ordinating activity, and finally, there occurs a complete disturbance of the vital activity, and naturally death is the result.

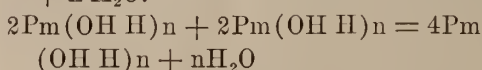
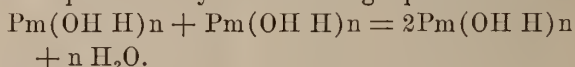
This phenomenon of displacement of specialized cells by primitive ones occurs everywhere in the tissues—and the relation that these tissues bear to the vital activity affects the maintenance of life in a definite proportion. Thus, fatty degeneration of the heart is of greater concern than fatty degeneration elsewhere in the system. Primitive cells (the osteoclasts) multiply around the osseous laminae, whence they draw the pith of the bony substance. The muscles undergo the same degeneration, being invaded by primitive protoplasm (the sarcoplasm).

What is the normal duration of time consumed in the final culmination of the triumph of the primitive over the specialized element? Buffon claimed that the normal duration of time was six to seven times that of the period of growth,

but he erroneously maintained that fourteen was the age at which growth terminated. Flourens properly fixed the age at which the process of growth comes to an end at twenty, at which age the bones have ceased their growth. Thus, the span of normal life is from 120 to 140 years.

We may now arrive at a definition of physiologic death from the point of view of the struggle between the primitive and specialized elements in the body of a highly specialized organism: Physiologic death is the final culmination of the triumph (unstimulated in their process by any cause whatsoever) of the conjunctive cells over the specialized cells, to bring about, by their unstimulated degenerative invasion of the vital organs, a complete disturbance of the mathematically harmonious and co-ordinating activity existing among them. Any deviation from this at once falls into the province of pathologic death.

Biological chemistry offers a supplementary explanation of the process of physiologic death. This process is one of deaquification by aggregation. This takes place in the ageing of all organic colloids, and is claimed to be the one which changes the organism from its embryo stage to senility and which finally ends in death. In the human species this process extrudes H_2O and defines the process of life from birth to natural death. Old age, expressed in terms of the biochemistry of senile degenerescence, is a certain stage of deaquification of the protoplasm of the tissues. This process of deaquification may be represented by the following equations:



($Pm(OH\ H)_n$ represents the colloidal protoplasm of the human tissues, and Pm stands for the protoplasm).

Biological chemistry has brought down the definition of physiologic death to an expression with a formula. The more interesting problem would be to discover a formula or a series of formulæ to represent the vital process, and perhaps when any serious efforts will be begun along this line some very vital and interesting facts will be discovered.

166 Rockaway Parkway.

OCULIST OR OPTICIAN, WHICH SHALL IT BE? A DRAMATIZATION*

G. F. SCHEIB, B. S., M. D.

CHAMPAIGN, ILL.

Good morning, Jones. How are you?

Well, John, just fair; for the last month or two I am not one hundred per cent. I get a headache frequently, and in the evenings after reading fifteen or twenty minutes my eyelids get heavy and old "Somnus" gets me. Can't understand it! Get plenty of sleep! Wake up in the morning feeling fine; but along about eleven o'clock I begin to feel drowsy, and a dull feeling comes through my temples; my eyes ache and the lids burn. These uncomfortable feelings keep increasing in severity until about four or five o'clock, I feel tired and worn out, and I go home almost exhausted. These feelings make me nervous "Peplless" and irritable. The job of life is almost a minus quantity. I do not feel like playing with the children when I get home, a thing I used to enjoy so much; and things around the house annoy me more than in former days. My wife ascribes my impatience and irritable state to my business cares, but business routine is about the same as usual!

Well, Jones, that is too bad! Did you ever think that your eyes might cause all these troubles?

Yes, I did, and I have a pair of glasses here from John Smith, an optician on Jackson Street. Aren't they nice looking glasses?

Yes, the mountings are fine, but the real service to be derived from a pair of glasses lies in the proper lenses. That is, the lenses must correct the error of refraction, or in other words the eyes should be carefully measured by a competent oculist. And you say you saw an optician! Why did you select an optician for advice on so delicate an organ as the eye?

Well, Joe Green told me he got his glasses of "Dr." Smith and they did him fairly well.

Yes, note the word *fairly*! Jones, you should have asked your family physician for a dependable oculist. The capable and ethical family physician always advises the services of the eye physician, or oculist, for his clientele. At least my family physician strongly advised me against going to the optician or the optometrist. You

know optician and optometrist mean the same thing. There is a difference between an oculist and an optician, though!

Is that so? What is the difference? I never thought of that; those terms oculist and optician have always confused me!

Well now, Jones, the difference is great, and sadly great sometimes. The oculist is an eye physician, and the laws of the state require him to have the degree of M. D. just the same as your family physician has his degree of M. D. The optician takes a course on refraction, or the fitting of glasses. He is not permitted by the state to treat diseases of the eye and his training does not include the fundamentals of the interrelations of eye troubles and the various diseases of the eyes to the general diseases of the body. The oculist is qualified to treat diseases of the eye and he is qualified to fit glasses with a method that the optician is not qualified to employ. The optician discourages the use of drops, but my family physician tells me it is the only way to get the correct lens for one's eyes. When the eyes are fitted without the use of drops that relax the accommodation, the optician must depend upon the patient's answers. These answers may be right and they may be wrong. But when the oculist uses the drops and the shadow test, the results are very dependable.

We have a girl in our neighborhood, a sophomore in high school, and she got a pair of glasses of an optician, a so-called "Dr. of optics"; a pseudo-title, by the way! The glasses did not relieve her headaches and she was slipping in her studies; she could not concentrate on her studies because of her eye discomforts. The fatigue produced by the effort of that little muscle of accommodation to overcome the error of refraction plus the added hazard of the minus lens caused a disinclination to mental effort with attendant bodily prostration. She had to be excused several afternoons each week from school because of the severe headaches—you know a severe prolonged headache will get the strongest down! She was recommended to an oculist and with the use of the drops he discovered that she needed a plus cylinder lenses axis 90 in each eye whereas she was trying to wear a pair of minus spheres supplied by the optician. The minus lenses aggravated her existing defect. So you see in addition to the suffering this girl

*This paper was awarded first prize in a contest sponsored by the Uhlemann Optical Company, Chicago.

experienced, there is an economic consideration in this thing of glasses. The girl's mother is a widow and her failure to receive any benefit from the first pair of glasses meant a total loss in money, as she had to have another examination by an oculist and additional expenditure of money for the right glasses. The last report from this girl is that her headaches are all gone and her grades are satisfactory to her teachers and she is happy in her school work; and you know, Jones, happiness in school work is beyond any monetary calculation.

Do you not believe, John, that many boys and girls never complete their school course because of handicaps due to poor vision or incorrect glasses?

Yes, I do. This girl is just one example of thousands! These children with eye defects lose interest in their school work because of the discomforts arising when they try to study with defective eyes. Poor lessons result and then punishments and humiliations that are sometimes worse than punishments follow and these children drop out of school, discouraged and sometimes disgraced, with their education just partially completed. And Jones! I want to give you another concrete example showing the difference between oculist and optician. And there are many similar cases! This case had a sad ending because of delay in making an early diagnosis. It was Mrs. Brown. She had eye trouble and she always insisted that if she had a good pair of glasses she could see well. And she placed emphasis on the word good. Isn't it strange that people cannot see beyond glasses when they have trouble with their seeing! They forget that the human eye is made up of delicate tissues that are subject to diseased conditions like other organs of the body, and sometimes disease in remote organs of the body are manifested in the structures of the eye. But it requires the training of an oculist to diagnose these troubles early in the onset of the disease, when prompt treatment will do the most good. Any mutt can diagnose blindness when one is blind. But what good does that do the victim? Well, Mrs. Brown visited a number of opticians over a period of two or three years. During all this time not one made a diagnosis. How could they? They lacked training. Pathology of the eye was an unknown quantity to these pseudo-doctors of optics. Finally she came under the care of Dr.

B., an oculist, an eye physician, and he examined her eyes very carefully with the drops and what do you think he found to be cause of her eye trouble? Well, Dr. B. told her it was not glasses she needed but she needed her family physician. The oculist found that the delicate tissue called the retina in the back part of the eye badly damaged due to kidney disease. The Bright's disease that Mrs. Brown had was the cause of her poor sight. Oculists tell me that when the retina of the eye becomes badly damaged or destroyed by kidney disease the patient lives about two years. Dr. B. told Mr. Brown the grave condition of his wife's eyes and the chances that his wife would not live more than two or three years. The eye findings were the local evidences of the degeneration going on in the kidneys. The fundus or back part of the eyes often serve as a bulletin board for pathological conditions in remote organs. But it requires ability and training to interpret this bulletin board. Her family physician gave her only temporary relief, and she died in about two years. Now, Jones, what we may learn in this Brown case is this: If Mrs. Brown's eye condition had been diagnosed three or four years earlier her vision might have been conserved and her life prolonged. She was a victim of incompetency and stupidity. I understand the oculist is often the first one to make a diagnosis of certain nerve disease, and other diseased conditions of the vital organs of the body by what he sees in the back part of the eye. Jones, what the people want or should have is an early and correct diagnosis. And that is the big reason that when you have a physical examination you should have a reliable eye examination also. The family physician and the oculist may work together all to the patient's benefit. Jones, here is another reason why you should consult an oculist. The able and honest oculist always wants to know all about your eyes, and if he finds that your eye trouble is due to systemic causes he consults with your family physician. He insists on a complete diagnosis. They tell me there is a little muscle in the eye that plays tricks sometimes, when one reads the test card. Now the oculist can fix that little muscle so that it can not make a mistake or tell an untruth and interfere with the eye findings.

How is that?

Well, the oculist drops some medicine in the

eyes which puts this muscle to rest, or relaxes it for several hours.

Yes, John, but those drops knock me out of my book work for a day or two.

Well, Jones, suppose you have to take a day or two off. What is that when you are dealing with that most precious sense, the sight? You must think of the results to be attained by proper correction. The oculist can give you a plus 3.00 or plus 3.50 D. lens to use while your eyes are under the influence of the drops and these lenses help out wonderfully!

There is one more reason that I want to give, Jones, for selecting an oculist rather than an optician, and it will assist you to see the difference between the oculist and the optician. Down at Washington, D. C., a vast amount of research work is done in the Health Department. Their eye physicians made careful estimates of the eyes of eighteen hundred and sixty children. They made careful examinations without the use of drops, and with the use of drops on all these children. And this research work brought these trained oculists to this conclusion: "The examination of the eyes and the fitting of glasses without the aid of drops are based on guess work." And these same oculists further say in Public Health Bulletin No. 182 page 11; "The preceding data on the results of Snellen tests before and after the use of Cycloplegic (drops) are of interest, but of minor significance as compared to the findings by retinoscopic examination." By retinoscopic examination we mean the shadow test after the muscle of accommodation is relaxed by the drops. These findings are authentic and dependable.

Well, John, your reasons, as given in these concrete examples, for seeing an oculist for one's eyes rather than an optician are the best I have ever heard, and they are sound. And that report by those research eye physicians at Washington settles the question for me. I certainly do not want any more guess work with my eyes! I shall call up my family physician at once for a dependable oculist.

Next morning: Well, Jones, I note you have seen an oculist.

Yes, John, and the oculist found that I had a minus cylinder of 1.50 D axis 180 in each eye by the optician, Smith, and the oculist tells me that I have a condition of mixed astigmatism and that I should wear a minus 1.75 sphere

combined with a plus 2.25 cylinder axis 90 in each eye. My eyes are too long in one meridian and too short in the other meridian.

You see the optician could not find the latent error. He attempted to correct one meridian and let nature correct the other meridian.

Well, Nature does an awful lot for us human beings, but sooner or later she revolts. And in my case she certainly filed her bill of complaints. By the way, John, can you tell me what this latent error is?

Yes, Jones, it is the difference between the lens the patient accepts when he is tested without the drops, and the lens required to read the

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— line after the accommodation is relaxed by a

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reliable cycloplegic or drops. For example, A

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reads — with each eye, and with plus one-half D.

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he reads —. After the use of drops he requires

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a plus two D. lens to read —. The difference

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between one half D. and two D. is one and one half D. and this represents his latent error.

Oh, I see John. How simple it is after it is explained!

Yes, playing the piano is easy for you after you are trained to do it. This latent error the oculist is enabled to find with the drops and it is this latent or hidden error that stumps the optician.

Then, John, it must be the latent error that remains uncorrected that causes so much distress in people who wear glasses with only the manifest correction,—the correction given by the optician.

Exactly so, Jones.

Well, John, I am seeing the light, or better still, the truth in this delicate work of refraction or glass fitting. And this truth has set me free; free from the ignorance of the propaganda that it is not necessary to use drops in refraction: the misrepresentations given out by the optician, because the law does not permit him to use drops.

Oh, Mr. Jones! There was one thing I should have suggested to you when we were talking

yesterday about selecting an oculist. It is this: when you get your prescription from the oculist it is equally important that you have your lenses made by a dependable and reputable manufacturing optical house or dispensing optician. Such a high class house employs very scientific artisans in the making of lenses. And their machinery equipment and all material is of the very best. The manufacturing optician or the dispensing optician stands in the same relation to the oculist and the patient as the pharmacist does to the family physician and his patients. The pharmacist compounds the prescription according to the physician's orders. So the manufacturing optician should do very accurate work in grinding the lenses and measuring and fitting the frames. This is important, Jones, and if the optician does not do his work accurately, the work of the oculist is disappointing: the patient is not pleased. The oculist is blamed sometimes when it is the man who fills the prescription that is the aggressor. Moral. Seek the best!

Yes, John, that is good advice and I am happy to say that I went to one of the most reputable houses for the filling of my prescription.

Well, see you in the morning! Goodbye!

The next morning found John and Mr. Jones ready for their day's duties. Jones had his new glasses checked up to the requirements of the oculist's formula,—a very wise thing to do!

That night when they left for home Jones said to John:

It certainly is a happy surprise to me that I am leaving the office entirely free of that peevish, tired feeling so common to me every evening for the past month or two. Can it really be that these new lenses are the cause of all this?

Certainly, Jones. Oculists inform me that the reflex disturbances from errors of refraction, or from incorrect lenses are legion. One would not believe the immediate and remote effects of eye strain! But careful medical men note these clinical findings.

When Jones arrived home that night his wife was surprised to meet her husband with a cheerful expression.

You do not appear so tired out tonight! You must have had a light day.

No, wife, I did more work today than usual; but I can tell you this; I was free from that

awful headache today, and that alone is plenty of reason to make me feel happy.

What? No headaches today?

Yes, wife, and do you know that my new glasses are preventing those terrible headaches.

Well, husband, it is certainly a revelation to me; the different husband you are since you have the correct lenses. I think the court of domestic relations should send these irritable husbands and wives as well, to a good oculist. He might be able to keep the clouds out of the domestic horizon!

That is a mighty good suggestion. Suppose you recommend a visit to the oculist for these nervous irritable friends of yours. You might be doing them a real service by your suggestion.

Say, husband, do you really believe that the use of the drops and the shadow test is the best method to examine the eyes?

Yes, indeed, I do. If you are looking for accuracy in diagnosis, it is absolutely essential. The lens you wear signifies the diagnosis of your refraction. In the case of that high school girl that John reported—she was wearing a minus lens which means a diagnosis of myopia or a near sighted condition, whereas the oculist found hyperopic astigmatism which means a far sighted condition. There you see the difference in diagnosis; and there are thousands of cases like this. Wife, after going through the experience that I have for the past two months, I can assure you that I am forever through with this guessing business in matters pertaining to those delicate organs, the eyes. If you or any of the children need attention to your eyes, keep away from those pseudo-doctors, the opticians. They advertise free examinations, but that is a bait for the unsuspecting, the innocent public. It may prove a very expensive experience. Better pay a fee for a correct diagnosis for real professional service, rather than buy a pair of glasses without a diagnosis. You will be ahead in the end!

I believe you are right, husband. Mrs. Curley has just had an experience with her little son, Rex. His teacher sent a note home to have his eyes examined. Without consulting her family physician she took Rex to one of those opticians. She called him "Dr. Bluff" on Main Street. You know they try to dignify themselves by "Doctor of Optics."

Well, wife, do not let that pseudo-title

stampede you into thinking a "Doctor of Optics" is an eye physician or an oculist. There is as much difference as day and night. You might just as well tag yourself "Doctor of Cooking" or "Doctor of Sisters of the Skillet!" Just as much meaning or sense to it!

Well, to get back to my text. Mrs. Curley took Rex to that optician who runs a jewelry store in connection with his optical business, that "Dr. Bluff," and he had Rex read the test

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card; he read the — line easily with each eye.

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And this jeweler optician assured Mrs. Curley very politely and very positively that Rex did not need glasses and that his eyes were perfect. He made this superficial diagnosis, which later proved to be a very poor guess, simply because

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Rex read the — line of the test card. Well,

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"Dr. Bluff" charged Mrs. Curley \$3.00 for this pseudo-diagnosis. And she was lucky at that. It could have been worse! Well, Rex goes back to school and in a few days another urgent note from the teacher stating that there was something wrong with Rex's eyes. So, Mrs. Curley consulted her family physician, reciting her experience with "Dr. Bluff." Her family physician assured her that the fact that Rex could

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read the — line did not mean that he was free

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from an error of refraction. "It is true he can read the required line," the physician said, "but we do not know how much latent error his muscle

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of accommodation is overcoming to read the —

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line. Mrs. Curley, you can hold a fifteen or twenty pound weight out straight with your arm muscles but how long can you do it before your arm gets tired? The same principle applies with the eye muscles when they are held taut in order to see distinctly with the handicap of an error of refraction." Mrs. Curley's family physician referred her to an oculist and he found that after that little muscle in Rex's eye was put to rest with those drops you spoke

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of, he could only see the number 3 line or —

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on the test card: — indicates normal. This

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proved that Rex had to strain that little muscle of accommodation an awful lot all the time to see distinctly. And it had to give it up in this effort; hence, the symptoms, and the reason why the teacher was sure there was something wrong with his eyes. And she was right in her convictions. Well, Rex is wearing his lenses and his teacher reports that he is doing his work well.

Say, wife, I made a check up on that jeweler optician that told Mrs. Curley that Rex did not need glasses.

And what are the findings, husband?

Why, he is one of the members of the State Board of Optometry.

What does that mean?

Well, he examines candidates for license to practise optometry.

And he not cognizant of the latent error? Isn't that a joke!

No, wife, it is not a joke! It is more like a tragedy! It is too serious a matter to be passed off as a joke! The great State of Illinois should not license any but eye physicians to care for the human eye. Mrs. Curley should thank her stars that she squandered only \$3.00. Just think what I paid Smith for my first pair of glasses! And think of the added torture and unhappiness I had to endure for two months, and the anxiety my irritability around home caused you. Let me tell you it is a shame that these pseudo-doctors are permitted to prey upon the innocent public. The pity of it is, wife, that so many people do not really know the difference between an oculist and an optician until they get their lesson by experience as I did, and those cases that John told me. Let me tell you, wife, there is one diploma of experience that is worth all it cost me. And if one does not profit by his experience he turns his best schoolmaster out of doors! Wife, it looks to me like this guessing business in glass fitting is a relic of the Middle Ages. In view of present day intelligence and advancement in the science of refraction, society has a right to demand the very best that medical science can give. It is a matter of education. The sponsors of this dramatization merit the thanks and support of the people. Wife, I cannot refrain from again speaking of my satisfaction with my new lenses.

The energy that I had to expend in trying to see with those ill-fitting glasses the optician prescribed for me was such a drain on my nervous system that I have been coming home for the past month or two all fatigued and irritable; but tonight I feel like a different man.

I certainly see a change for the better in your behavior!

Jones played with the children until dinner was ready, and after another round with the children after dinner he read until ten o'clock without any discomfort.

Next morning Jones met John at the office and again thanked him for his interest in his eyes and for his advice in selecting a competent oculist.

Such cases like that of yours, Jones, can be duplicated thousands of times from the careful records of oculists all over the state.

Conclusions:

Improper correction of refractive errors is common. It does not require effort to become careless.

Improper refraction affects efficiency in education and in industry. It is an economic problem.

Every candidate for correction of refractive errors is entitled to a correct diagnosis. Hence the physician's fee.

Correct refraction is constructive and conservative in its ultimate results. It is an asset.

Inaccurate or improper refraction is destructive of comfort and happiness and becomes a liability to the victim of careless refraction.

Cycloplegics (drops) and retinoscopy (the shadow test) are essentials in correct refraction. It takes the guess out of glass-fitting. This method is dependable and scientific.

PRIMARY UNION IN EXTERNAL PERINEAL URETHROTOMY

C. OTIS RITCH, B.S., M.D., F.A.C.S.

Attending Urologist, Illinois Masonic Hospital, Assistant in Urology, University of Illinois

CHICAGO

The recent storm centered around the persistent cry of the "High Cost of Medical Care," which should more properly be termed the "High Cost of Being Sick," together with a second factor to be discussed presently, prompts me to make this report. The glamor associated with so catchy and popular phrase or slogan draws

those would-be martyrs within its radiance just as the light attracts the moth.

The second factor is the time element in hospitalization of certain types of cases of perineal section. The average post-operative hospitalization and healing of perineal fistulae following external perineal urethrotomy will vary between three and four weeks, with an occasional fistula persisting for longer periods of time, even requiring subsequent plastic operations for repair. The prevalent custom, with few exceptions, is to drain the bladder with a perineal tube following perineal section for stricture. In selected cases during the past two years I have depended entirely upon urethral bladder drainage, e.g., a large urethral catheter passed through the meatus into the bladder and the perineal wound closed without drainage or only skin drainage; in this manner obtaining primary union and reducing the patient's post-operative sojourn in the hospital to twelve or fourteen days which could be further reduced if one did not care to see the patient daily for instrumentation. This method is applicable only in properly selected cases.

The incidence of urethral stricture is noticeably less under present day treatment of urethral affections than formerly when treated with irrigating and escharotic drugs. Nor do we see such a large percentage which are neglected until terrifying complications present themselves.

The management of strictures of the urethra is a fascinating one for the urologist, because in the care of these cases the surgeon constantly carries a trump card up his sleeve, or in other words, if one procedure does not work he can draw another from his bag of tricks. A stricture by which an instrument can be passed; whether of large, medium, or small calibre, that does not lend itself to gradual dilatation lays itself liable to operative interference, regardless of its location, just as readily in either the anterior or deep urethra.

A small calibre or filiform stricture in any portion of the urethra may respond with gratifying results to gradual dilatation; but more often than not, they are better treated by surgery with subsequent dilatation. The uncomplicated ones in the anterior urethra are repaired by internal urethrotomy. Indeed, those in the deep urethra may be handled in like manner; but are better managed by external perineal

urethrotomy, thus avoiding a rather blind operation with danger of hemorrhage, infection and injury of tissues better left uninjured.

In the impermeable or impassable type, wherein no guide can be passed into the bladder, one of several things may be done. The injection of methylene blue, in my hands and in cases I have witnessed, proved more of a nuisance than an aid. It is just as liable to seep through false passages as the true urethra and ordinarily messes up and practically obscures the field of operation. This where a clear field is of paramount importance. An external perineal urethrotomy without a guide is the procedure of choice. In the vast majority of cases a skillful and careful dissection will enable the surgeon to find the urethra, incise the stricture and with a gorget follow the urethra into the bladder. After which, if indicated, further attention may be directed to the stricture and repair of the urethra. In the rare instances where one is unable to enter the bladder in this manner, a supra-pubic retrograde catheterization through a trocar may be done, in which case the perineal operation is carried out in the same manner as with a guide; or a supra-pubic cystotomy with retrograde catheterization may be carried out in order to secure the urethral guide.

There are several methods of draining the bladder following an external urethrotomy which may be used, in fact, are used. The most common are: a large perineal tube, or perineal tube and urethral catheter. A much less common procedure is by a large urethral catheter only. Young¹ is one of the few who employ urethral drainage only. This manner of drainage and closure is suitable only for the non-injured type and in the absence of hemorrhage. He says:

"A large catheter is then passed into the bladder through the urethra and the soft tissues are drawn together, fairly tightly, around the catheter with a continuous cat-gut suture. The perineal fascia is approximated by a similar line of suture, and the skin and subcutaneous tissues are closed completely, except at the anterior angle, where a small superficial pack is inserted for drainage of the skin wound. The catheter emerging from the meatus is fastened in place and mild antiseptic treatment of the bladder several times daily is carried out to prevent infection. The catheter is left in place for about a week unless suppuration or irritation requires early removal. Thereafter urethral dilatation with sounds should be

carried out beginning about the twelfth day and repeated once every four or five days until cicatrization is completed and a normal large urethra insured.

"The rapidity with which the urethral mucous membrane will cover a defect after extensive excision of scar tissue is remarkable. This natural replacement is so effective that the extensive plastic operations which have been described by Marion, Cabot, MacGowan and others are rarely necessary. Likewise, complete resection with end-to-end anastomosis of the urethra has little or no place in perineal surgery, with the possible exception of those cases of extensive scar tissue formation following rupture of the urethra and other traumatism in which the ends of the sound urethra, anterior and posterior to the strictured area, are so widely separated as to render the restoration of continuity by natural processes extremely improbable.

"Recently MacGowan has published and described a very extensive plastic operation upon the urethra. We have had no experience with such procedures, nor have we found them necessary."

Chetwood² uses a perineal tube and says: "In the simple and uncomplicated cases, this tube can be removed in twenty-four to forty-eight hours." Ballenger³ thinks: "The perineal wound should be brought partially together by sutures of catgut or silkworm gut and then packed with iodoform gauze." The late Guiteras⁴ used a perineal tube and later substituted a urethral catheter which he removed every second day in order to pass sounds.

Keyes⁵ uses a perineal drainage tube and appears to be partial to supra-pubic drainage and small sized tubes and sounds. In Cabot's *Urology*⁶ he advises removal of the perineal tube in twenty-four to forty-eight hours.

I feel that in properly selected cases there is a definite percentage in which one can dispense with the perineal bladder drainage and rely with safety upon draining the viscus per urethram. Realizing that the majority of external urethrotomies one is called upon to perform are not safely handled in the foregoing manner, in that event I follow the prevailing local custom of inserting both a urethral catheter and perineal tube into the bladder. To further healing of the urethra, the catheter is left in place until one is forced to remove it because of irritation and infection. This is generally about the end of a week. The day following the removal of the catheter, a sound is gently and patiently passed into the bladder. This is repeated with increasingly large instruments daily or every second day depending upon the local conditions present in

the individual case. Much has been said about frequent irrigation of the bladder, some advising several irrigations daily, in order to keep the bladder free of blood clots and infection. My experience has been that with careful dissections and careful handling of the tissues, together with the use of as large catheters and tubes as can be used, there will be little cause to worry about troublesome clots forming in the bladder.

An infection, not infrequently, is the result of too frequent bladder irrigation. It is probably less harmful to irrigate too seldom than too often. A lavage daily or every second day is quite sufficient in the ordinary case, while multiple daily irrigations are very likely to carry infection into the bladder and operative wound.

Those surgeons who advise waiting from several days to two weeks after removal of the perineal tube or urethral catheter before passing sounds must certainly be dealing with a different class of patients than I; or they would very likely be unable to pass any urethral instrument into the bladder. The day following the removal of the urethral catheter, a sound may be passed with little or no difficulty. However, the difficulty increases with each elapsing day since, as previously stated, replacement and repair takes place remarkably fast. The lumen is narrowed and false passages made in the soft granulating tissues with but little force although extreme diligence and care are exerted.

In the management of these cases, one constantly bears in mind a classification determined upon the presence or absence of active infection. The word active is used purposefully. In the former are the cases of urinary extravasation, urethritis, peri-urethritis, prostatitis and peri-urethral abscess. The latter type is distinguished by the absence of any of these complications. It is extremely improbable that there will be an absolute absence of any infection whatever, but rather that the individual has accustomed himself to a low-grade infection; or has developed an appreciable immunity to it, so that there is no longer an active process, rather a low-grade or attenuated infection.

It is needless to remark that perineal drainage should be instituted in the frankly infected cases. One is occasionally mistaken in the selection of cases, and in the absence of a perineal tube, infection of the perineal wound takes place, which however, offers no great obstacle to

the patient's recovery if recognized early and properly cared for. The remark in a former communication⁷ "each case is a distinct entity and should be so considered" is especially applicable here, as success or failure depends entirely upon the proper selection of cases. Greater judgment is required in this particular than skill in the technical procedures of the operation.

CONCLUSIONS

1. Perineal drainage may be eliminated in properly selected cases.
2. The hospital stay of a definite percentage of these patients can be materially reduced.
3. In this group hospital expenses are reduced.
4. The injection of methylene blue to enable one to find the "true passage" is of questionable merit.
5. Careful dissection and employing large drainage tubes reduces clot formation, and reduces the necessity for multiple daily irrigation.
6. The less frequent the irrigation, the less danger of infection.

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55 East Washington St.

ASPECTS OF MEDICAL QUACKERY*

HENRY R. KRASNOW, M. D.

University of Illinois College of Medicine

CHICAGO

In attempting to make a study of the problem of medical quackery we must first find a suitable definition for the term with which we are to deal. Let us then agree to designate as quackery every attempt to deviate from the established methods of medical practice or medical ethics with the view to benefiting the practitioner rather than the patient or the profession at large.

Permit me to elaborate on this definition. The practice of medicine consists in the diagnosis, treatment and prevention of disease, and in-

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cludes all the activities which these processes entail. At any given time certain methods and opinions are held to be correct, and are currently accepted by the majority of men in medical work. The activities that correspond to such methods and opinions in general circulation constitute regular practice. Such activities follow the common rules; they are in harmony with what is authoritatively established and approved; they are in accord with what is customary and conventional. Practice that does not derive from common rules, that departs from the general course of a given time, is known as "irregular" practice or *quackery*.

We may safely divide irregular practitioners into two groups: "good irregulars" and "bad irregulars." Under "good irregular" medical practice we may include such forward steps in medicine as are found in improved chemotherapy, in immunotherapy, that is to say, preventive medicine, in organotherapy, or treatment on the basis of such knowledge of a reliable nature as we have of the endocrines (thyroxin, adrenalin, pituitrin, etc.), and finally psychotherapy, or such methods in the mental treatment of the abnormal as are practiced by psychiatrists. Such departures as are made in these fields, on the basis of ever-growing knowledge, must be recognized as good irregularities. There are those among us, of course, who do not favor one or another of these methods. But the use of any of these methods would not constitute quackery for the following reasons: (a) it does not necessarily harm the patient (b) it is not intended to lower the standards of legitimate medicine, and (c) it does not necessarily aim at the exploitation of the patient for monetary gain. It goes without saying that, should any of these methods find lodgment in the hands of a totally incompetent charlatan, these commendable advances in medicine would immediately change from a possible benefit to an unthinkable danger to both society and the profession which we represent.

"Bad irregulars" are then those who adapt any of the recent discoveries or improvements in the field to their uses. Under this heading we must also include those who attack the credulous public through the use of magic and mysticism. Here belong witch-doctors, herb-doctors, magnetic healers, and all charlatans from the crudest type of blatant swindler to the subtlest, most

persuasive advertiser of patent-medicine nostrums, mineral-spring water cures, queer diets, tuberculosis cures, cancer cures, drug-addiction cures, manhood restorers, mechanical manipulators—including chiropractic trickery, electrotherapy, and more of this kind who deceive even the more sophisticated and skeptical of our folk and kin.

"What diseases do medical quacks specialize in?" my colleagues often ask. It is safe to say that there never was a case where a quack declined to treat a disease. Quacks go farther than this, however, and assume control, allegedly medical, of neurasthenics whom they persuade of being ill, when very often the opposite is true. Unlike general practitioners, quacks make no outside calls, or do so at extremely rare intervals, confining their practice to the office. It may be said, however, that the following classification holds true by and large:

In men—Venereal diseases (chronic and incipient cases), gastro-intestinal complications, sterility, sexual impotence, hernia (therapeutic cure), neurasthenia, and "the smoking habit."

In women—"Women's diseases," venereal diseases, neurasthenia, "worms."

In young men—Masturbation, venereal diseases, and other disorders attributable to the genito-urinary system.

It will be readily observed that the quack does not venture into such branches of medicine or surgery as require elaborate scientific research, offer little or no chance of deception, and presuppose expert erudition and training.

There are three aspects to the problem of quackery: the scientific, involving diagnosis and treatment; the economic, which involves both the financial condition of the patient and the income of the regular practitioner, and the social, affecting the welfare of the group. Let us take these up in the order given.

We all know that years of practical experience and theoretical study are required to understand the physiology and pathology of the human organism. How, then, can quacks, men who have had, in most cases, no medical education whatsoever, make a conscientious diagnosis and employ suitable treatment? It is not to be wondered at, therefore, that the treatment given by these totally unqualified men and women results in unbounded suffering and a thoroughly alarm-

ing incidence of death. For who is the pseudo-scientist called "quack?" He is but one of a group of unlovely and by no means select circle of charlatans embracing the manufacturers of "cure-alls"—those marvelous nostrums, a few bottles of which will cure all the ills known and unknown to mankind—and the "cultists," those seers of the invisible and unknowable and unthinkable, whose curious methods and pretences to omniscience also proclaim their unlimited power to overcome human ailment—and the various "doctors" who are, by trade, druggists, barbers, midwives, pseudo-chemists, and so on through the amazing list.

All these levy their heavy toll upon ignorance, for ignorance is the foundation of every business edifice on Quack Street.

Then there is the economic side of the question. Sharp-eyed for money, sharp-eared for the careless words of his dupes which may lead him to a proper diagnosis of his patients' financial condition, the quack is singularly blind and deaf to human pain. Indeed, that the dupe who strays into Quack Street has no disease means nothing to the quack. The victim is promptly supplied with one of an imaginary nature, or else with a genuine condition due to "treatment" given him.

When the dupe who is unfortunate enough to stray into Quack Street is actually diseased, he presents a still greater tragedy, for the more serious the disease the more serious the usual consequences. And when reputable physicians cry out against the practices of these unscrupulous people, the quacks often retort with a far louder cry of "jealousy" and "fear of losing practice." The fact is that the reputable physician suffers little economically from the practices of quacks because his services are usually in the end called on to undo the evil done. It is not merely "economic pressure," therefore, that actuates the legitimate practitioner in his battle against quackery, but his feeling for humanity to whose service he has dedicated his life.

Dr. Arthur J. Cramp, director of the investigation and propaganda department of the American Medical Association, conservatively estimates that the American public spends around \$200,000,000 yearly for patent medicines and nostrums of all kinds. From another source the estimate is suggested that the annual quack-

ery bill of the nation could be put up to \$355,000,000 or more. How can such conditions, in a civilized country, be permitted to exist? One answer is the laxity of the laws. The legislative committee of the Illinois State Medical Society, headed by Dr. J. R. Neal, is even now engaged in the promotion of bills which will put the cult-exponents who have invaded our profession under more stringent control. To quote from a recent publication of the committee:

"Bidding for full legal equality with the medical profession, the cults have descended upon the Legislature this year in a desperate and determined effort to radically lower the standard of medical practice in Illinois. If not to lower medical standards to the level of their qualifications, why do they ask for new laws? The approach to medical practice under the present Medical Practice Act is wide open to all who qualify."

The committee is now particularly concerned about curbing some osteopathic bills which are before the legislature and threaten to go through. But to quote from their publication once more,

"In addition to the four osteopathic bills there are now pending in the Legislature six naprapathic bills, two chiropractic bills, a physiotherapy bill, and two vicious mid-wife bills."

Of course, enlightened public opinion *does* exist, and there are intelligent governors and legislators who will not allow quacks, nostrum-vendors, and half-educated cultists to perpetrate their tragic jokes on the community. Let me refer to the recent veto by Governor Buck of a bill to create a board of chiropractic examiners to "regulate" chiropractic in the state of Delaware. In returning the bill to the legislature which had passed it, the governor added this intelligent comment:

"The purpose of the act, as I understand it, is to legalize the practice of chiropractic in this state. Practitioners of this cult are not recognized now. Do they profess to be doctors in the same sense of the term as is commonly understood to apply to men and women of the medical profession?

"In so far as I am able to determine, there is not a recognized medical school in the country that includes in its curriculum a course in chiropractic. This fact in itself seems singularly significant.

"Even to the lay mind the idea that all disease of whatever character is due to spinal displacements of a mild sort, and that cures of such ailments as tuberculosis, smallpox, diphtheria, scarlet fever and others can be effected by manipulations and finging of the spine is preposterous.

"Before returning this bill to you I have satisfied myself that the training and education a chiropractor,

or drugless healer, needs to practice his art does not fit him properly to advisedly treat the sick, inasmuch as he is not qualified to diagnose ailments nor recognize communicable diseases and to take measures to control them. He is therefore an opponent to the department of health.

"Wherefore it seems to me that it would be inconsistent for the legislature to appropriate, as it will do, money for the state board of health, which board is trying to eradicate communicable diseases, and at the same time legalize the practice of a cult which does not believe in the germ theory of disease, but does teach and believe that such diseases as scarlet fever, etc., are due to a distracted vertebra and the method to prevent and cure such disease is to see that everybody has a normal spine."

Yet legislation alone will not produce desirable results. I say not alone, because it is undoubtedly necessary to have legislation before we can have enforcement. But enforcement—by judges and police—is absolutely essential in the end. Let me quote a case cited in the *Journal A. M. A.* for January 17 of this year:

"W. A. Ford, formerly a Pullman porter, pleaded guilty, Sept. 25, 1930, in Judge Fetzner's court, Chicago, to a charge of practicing medicine without a license, on complaint of the Illinois Department of Registration and Education. Inspectors of the department presented evidence to show that this man had taken the name of a former Chicago physician, Dr. Walter Ari Ford, now of Sheboygan, Wis., who appeared as witness. According to their report, the impostor not only prescribed, diagnosed and acted as surgeon but also wrote narcotic prescriptions. Ford was fined \$100 and sentenced to thirty days in jail. Shortly after, the department learned that the judge, after consultation with Ford's lawyers, but without notifying the department, had agreed to vacate the sentence and fine Oct. 21, 1930. An inspector visited the court on that day, but the hearing was postponed to October 28. When the inspector appeared in court on the latter date, Ford's lawyer asked for a continuance, which was granted to Nov. 5, 1930. At this hearing inspectors insisted that evidence be presented to show why the fine and sentence should not stand. Such evidence was not presented, it is reported, but the judge dismissed the case with the decision: 'Fine and sentence suspended and probationed for one year.' Ford had been indicted by a federal grand jury on a charge of selling narcotics without being a licensed physician."

If the battle against quackery is to prove a success, the mass of the foreign-born, which constitutes so large a proportion of the country's metropolitan population, must be educated to the peril with which they are ever confronted—the quack. Of all the means employed for the purpose of reaching the great majority of these foreign-born, the foreign-language press is the most

suitable. The foreign-language newspapers have the situation in their palm. It is they who can sound the death knell to the charlatans, if they so desire, by excluding objectionable advertisements from their columns. Most unfortunately, the foreign-language press has not as yet succeeded in turning from the lure of ill-gotten gold to the cause of working for the benefit of their co-descendants and countrymen.

As chairman of the Committee to investigate quackery, appointed by the Douglas Park Branch of the Chicago Medical Society, I sent a letter to editors of 250 foreign language newspapers, each of which had a circulation of between 30,000 and 250,000, and could well afford to discard fraudulent advertising, urging them, for the benefit of their readers, to discontinue the publication of all matter which is designed to take advantage of the ignorance of the foreign population. It is a most regrettable fact that out of these 250 pleas only twenty-one were answered, 90 per cent. choosing not to answer, and so admitting their guilt with something like equanimity. They have substantiated the fact that they would rather serve as conscious factors in spreading the evil of quackery than lose lucrative income derived from quack advertisements. This fact is especially significant because the foreign masses, having come from lands where newspapers are the sole disseminators of knowledge, depend to an almost unbelievable degree on what they read in the newspapers or journals published in their native tongue. However, I feel that the recent crusades against quackery instituted by the English newspapers, notably the *Chicago Daily Tribune*, will in time, persuade the editors of the foreign press that for the benefit of their countrymen they should maintain a strict censorship over all advertisements of medical practitioners and patent medicines.

Much more remains to be done. Personally I have given much thought to this problem and have consulted directly and otherwise many men prominent in our profession and known to be interested in the welfare of society. After considering the problem from various angles, we have arrived at conclusions which I have decided to embody in one consistent program, aiming to accomplish the desired end in the anti-quack movement. This program has been worked out in collaboration with physicians and social work-

ers after some strenuous debating on the pros and cons of the subject, and is summed up in the following suggestions:

1. The practice of medicine or any branch of it should be limited to graduates of colleges recognized by the American Medical Association or the United States Public Health Service. This would naturally eliminate Chiropractors, Naprapaths, Christian Scientists, midwives, as well as many others who claim to pursue medicine as their "natural vocation." This will also bring as a consequence legislation classing medical quackery with other criminal offenses.

2. Before a prospective physician may be entitled to practice medicine he should, in addition to graduation from a recognized medical college, have passed a comprehensive examination demanding a thorough knowledge of the fundamental branches included under the general concepts of medicine and surgery.

3. Druggists should be prohibited from selling drugs or remedies other than those approved by the American Medical Association or asked for in the prescription of a registered physician. It is indeed surprising how this unfortunate condition has been allowed to linger in our midst. The laws governing such sales are extremely lax, and little or nothing has been done by the medical societies or boards of pharmacy to check them.

4. Quack advertisements, literature and samples of all kinds should be excluded from the mails, unless accompanied by a permit from the A. M. A. or addressed to a doctor of medicine engaged in practice. It is entirely obvious that it is the duty of the federal government to protect the health and wealth of our citizens in this manner.

5. The medical profession should be properly represented in our national and state government. If we have a secretary of agriculture who, among other things, protects the lives of our hogs and cattle, there is surely no reason why we should not have a secretary of public health as a member of the cabinet, whose duty it would be to protect the lives of the inhabitants of our country.

According to statistics, forty years ago typhoid fever claimed by death two thousand individuals in Chicago, which at that time had a population of about a million people. In 1930 with a popu-

lation of almost three and a half million it claimed only twenty lives in one year—in one city alone. Similar figures can be cited in regard to such diseases as diphtheria, tuberculosis, and many others. Who brought about these changes? Chiropractors, Osteopaths, or any other "cultists?" Although it means a loss of millions of dollars in income derived from treating patients afflicted with these diseases, the regular medical profession of the city of Chicago unselfishly and energetically came forward and insisted upon a pure-water supply which resulted in the prevention of much illness and the saving of thousands of lives. Can anyone point to any other group of men doing as much for the community?

The practice of medicine has been altogether too much abused and only an earnest effort to co-operate with the public in bringing about the ultimate downfall of the quack will remedy the evil which threatens to become more than a nuisance to us. Such an effort means organization. Organization for this purpose must take the form of co-operation with the educational agencies of the existing societies, national and state, and it means furthermore, the establishment of a state-wide and, ultimately, of a nation-wide bureau supported and headed by a group of medical men, for the purpose of investigating and reporting the activities of quacks. We must have complete statistical data on these activities; we must have a sufficient collection of cases to establish the methods—various and sundry—employed by quacks in ensnaring their gullible patients and in treating them; and we must provide for the dissemination of such knowledge as this bureau would collect and prepare for popular consumption and for the use of the profession.

Assume that a million-dollar co-operative advertising campaign by organized medicine educating the public against quackery, would reduce this waste 25 per cent. and turn that much revenue into legitimate channels. The result, you realize, would allow each practicing physician a yearly increase of \$683.00 less \$10.00, his share of the campaign costs, and what is more, a net income of about \$8,000 within three to five years. I consider such an undertaking essential to our welfare, most important for the welfare of the community, and a real challenge to the quacks

themselves who, forced into legitimate pursuits will either bring upon themselves deserved repute as public servants or will all the more quickly place themselves in the jails and penitentiaries of our land.

To the end that such an institution be created, for the first time in this state, I invite the unqualified co-operation of every member of the profession. Too many physicians have thus far been indifferent to this important problem. It is the duty of every practitioner to see to it not only that the high standards of the medical profession are maintained but that those who ignorantly attack our methods, and the knowledge accumulated through centuries of painful effort and at great personal risk by our predecessors, are properly dealt with.

SUMMARY

1. Quackery is a form of parasitic existence which our profession has had to combat for many years as a scientific, social and economic evil.

2. Quackery is not to be confused with "good irregular practice" which aims to introduce new methods of therapy and prevention into the practice of medicine.

3. Quacks specialize in every disease; they are omniscient and all-powerful and cure (?) even diseases which no regular practitioner would ever undertake to cure.

4. Quackery costs the American public from two hundred to three hundred and fifty million dollars yearly. Such an expense is not to be disregarded even if we do not consider it legitimately ours.

5. The laxity of our laws, uninformed and indifferent public officials charged with the responsibility of enforcing such laws as do exist, the general ignorance of the population—particularly the foreign-born element, and finally, the wayward and selfish conduct of the press, especially the foreign-language press, constitute the chief causes of the situation as we find it.

6. The methods of control suggested are: (a) the practice of medicine to be limited to graduates of regular colleges of medicine, so as to exclude all cult institutions of whatever character; (b) the selling of drugs to be permitted only on prescription of a licensed physician; (c) the mailing of medical literature or sample medicines to be prohibited unless approved by

the A. M. A. or addressed to an M. D.; and lastly (d) the foundation of an institution, state-wide in character, but later nation-wide, to study and disseminate knowledge about, and help to eradicate through efficient propaganda the quacks who infest our country, harming both the population and our profession.

DISCUSSION

Dr. Arthur J. Cramp, American Medical Association, Chicago: Before discussing Dr. Krasnow's paper I want to take this opportunity of telling those here that don't know the fact that some fourteen years ago Dr. Krasnow did a most valuable piece of public health work in attempting to clean up the quack advertising in the foreign-language press in Chicago. At that time he felt, as he admitted, that he had accomplished but little because the papers didn't seem to pay very much attention to the work that he was doing. But his work made a powerful impress and led to a cleaner press.

In discussing Dr. Krasnow's paper, I have to take exception to his definition of what constitutes quackery. I don't believe we are justified in calling a man a quack simply because he doesn't follow the orthodox methods of modern medicine. If that were true, most of the advances that have been made in modern medicine would have been made by men who, technically, at least, would have had to be, at the time, called quacks. A quack, as I see it, and as I think most of the dictionaries and other reference works give it, is essentially a man who brags or boasts inordinately about what he can do. It doesn't mean that he is incompetent. Many quacks are quite competent. It doesn't mean that he has no license. Many, many quacks are, unfortunately, licensed. It doesn't mean that he is uneducated. A great many quacks in medicine today are graduates of some of the best medical schools in the country. But the man who brags inordinately about what he can do is a quack. And, unfortunately, there are plenty such.

I think we should get out of our minds the idea that the quack, in some way or other, hurts the economic status of the reputable physician. I don't believe he does. On the contrary, I think that from an economic point of view he helps us. Especially does he help us if we include in the term quackery—and I think we should—the exploitation of nostrums that are advertised so widely and by such blatant and boastful methods. I have said many times in talking to the public that if the patent medicine industry were destroyed over night, next to the patent medicine manufacturers themselves and the newspapers that share so largely in their profits, the next group that would be most seriously hurt, financially, would be the medical group. Every advertisement of a kidney pill—"every picture tells a story"—that convinces a hundred people who have a pain in the lower part of the back that they have kidney disease (which, of course, they probably haven't), will probably send as many people to the

family physician as it sends to the drug counter. The whole patent medicine industry is based on the theory of making hypochondriacs, and there is no question in the world but that tens of thousands of people go to the family physician every year because they have been frightened into believing that some passing indisposition they have is something serious, due to the vicious patent medicine advertisements they may have read in the daily newspapers. So don't get the idea that the quacks or the nostrum exploiters—and nostrum manufacturers are also quacks—hurt the income of the physician. They do not.

If a physician were only concerned with the dollars and cents aspect of the situation, he would say to the nostrum exploiter, "Go the limit. The more victims you get, the more patients I shall get." Our reason for opposing patent medicines and quacks is the same reason we have for eradicating typhoid fever and smallpox; because they are menaces to the public health. It is because it injures the public; it isn't because it injures us. It doesn't injure us. It means business for us.

Neither do I agree with Dr. Krasnow's suggestion that before patent medicines, or proprietary remedies (to give them the correct name), should be permitted to be sold, they should have the approval of the American Medical Association or even of the United States Public Health Service. In the first place, the American Medical Association is a scientific organization. It has no punitive powers and it wants none. I think it wholly repugnant to the American system of government to have too many *verboden* signs. Prohibitory laws are quite likely to bring in their wake greater evils than those they were created to do away with. I don't think it would be a good thing for the American Medical Association to have the power of determining what proprietary remedies the public might use. I think it would be a most dangerous power to put in the hands of the medical profession, and in the long run, it wouldn't work out in the interest of the public—and the public's interest is really the fundamental problem of this whole thing.

I believe that a great deal of the quackery we have is to be found in the cults, among the chiropractors, osteopaths, naprapaths and naturopaths, and I think we have been by no means blameless in our attitude towards laws governing the practice of medicine in the growth of these very things. We have in practically every state, definitive laws governing the practice of medicine. There are many who think that these laws have been passed in the interest of the medical profession. They haven't been. They were passed in the interest of the public. It wasn't to give doctors a monopoly of the healing art that they were passed. They were passed in order that the public might have, as it should have, among those who practice the healing arts, only such as are competent to practice such arts.

Now, because of the character of most of our medical practice acts, it was inevitable that when a cult, such as homeopathy, had become organized, the homeo-

paths should go to the legislatures and say, "Gentlemen, our particular school of medicine has reached the point where we believe we should be permitted to protect the public against incompetent homeopaths, and we want a law similar to the law that the regular physicians have, that will require homeopaths to have so many years of schooling, and then pass an examination by the homeopathic board." The laymen in the legislatures thought the idea reasonable and passed such laws, and we had a homeopathic board. When the eclectics came along, they did the same thing; and the osteopaths had the same story, and the chiropractors the same, and no one knows where it is going to stop.

Now, all of the latter day cults—osteopathy, chiropractic, naprapathy, naturopathy—are simply back doors to the practice of medicine. Every physician who has practiced any length of time knows that. Those fellows go to school for six months or a year or two, or don't go to school at all but get a diploma on the correspondence plan, and take examination in such states as license these various cults. And the first thing you know, they are pre-empting the functions of physicians and there is no stop to it. They should never have been given the power to treat human ailments, and they never would have been given such power if the law required all persons who wish to practice the healing art to have a knowledge of the fundamental sciences on which all healing arts are based.

There is also, it is true, quackery in regular medicine. There is no doubt about that. But there is an infinitely greater proportion of quackery among the cultists than there is among those who may legally call themselves doctors of medicine, M. D.'s. And for that reason I think a discussion of the cults is tied up with the problem of quackery.

In discussing these questions with the intelligent layman, you will find that he may say, "Well, doctor, don't you believe that osteopaths sometimes do some good?" The answer is, "Why, of course, they do." There is no question but what certain manipulations of the muscles may, in certain cases, do good. But the manipulations of the osteopaths are not osteopathy! It is hard to get the public to see that osteopathy is an alleged philosophy. It is just as preposterous to say that because the manipulations of an osteopath give a certain patient some relief, therefore, there is something in osteopathy, as it is to say that because mental therapy is a good thing, therefore, the incantations of the mumbo-jumbo of the African jungle may be.

The whole point of my talk is that I did wish that Dr. Krasnow could have kept closer in his definition of the term quackery. A quack, as I see it, is essentially a man who brags and boasts inordinately about his powers and not necessarily a man who is incompetent or uneducated or unlicensed. He may be competent, he may be licensed, and he may be pretty well educated, and yet, if he boasts and brags inordinately about what he can do, he is a quack. And that goes not only in medicine but in politics, religion and various other things.

Dr. Krasnow, in closing: My main purpose is to

deplore the laxity of our laws governing the practice of medicine. Indeed, whatever is good for the profession is good for the public and vice versa. As to my definition of quackery, I hope when I reach the point of having as much experience as Dr. Cramp I shall define it as he does, but I am very happy to have had Dr. Cramp discuss the paper and I hope we shall have the cooperation of the profession in carrying out the points which my work toward the solution of the problems of quackery has prompted me to establish in this paper.

CANCER OF THE UTERINE CERVIX*

ROSWELL T. PETTIT, M. D.

Illinois Valley Hospital

OTTAWA, ILLINOIS

It is not my purpose in this paper to deal with a detailed technical discussion of methods of application of radium and x-ray in the treatment of cancer but rather to trace the development of radiation therapy—this includes both radium and x-ray—as I have observed this development in the various European centers during the past ten years; to compare the several different theories of practice of radiation therapy and to draw certain conclusions (for myself at least) following these observations, and after having applied the several different plans of procedure in my own practice and on my own patients, in over two thousand cases representing carcinoma of practically every sort in the various body locations, and after an observation of various plans of radiation treatment in over two hundred cases of carcinoma of uterine cervix.

In order to avoid confusion and to center the discussion on some definite point, I have selected carcinoma of the uterine cervix because in this disease radiation therapy has most clearly demonstrated its value. In this disease there is no longer any need of discussing the relative merits of radiation and surgery. The surgeons of standing throughout the country, those of experience and reputation, are all agreed that the results achieved by radiation have taken this disease out of the surgical domain. It is also a condition, because of the location of the uterus, that stands midway between superficial and deep cancer. The uterus is not a vital organ, it is centrally placed, it is accessible, and the methods of super-

ficial and deep radiation therapy may be applied. Perhaps from a study of methods used and the results achieved in this type of cancer general conclusions can be drawn that are applicable to other types of cancer in other locations. If not, the study of uterine cancer itself is of extreme importance, because of its frequency and the seriousness of its character.

For the purpose of discussion I have selected three European centers, Stockholm in Sweden, Munich in Germany, and Paris in France, because they represent three schools of thought, because they have worked more or less independently and because, due to police registration in all of these countries, every citizen is registered, his change of domicile is recorded, and he can be traced. In other words cases treated can be kept track of for long periods of time, and as you know the ultimate results of treatment in carcinoma cannot be determined until after a five-year period has elapsed. Treated cases in America can be traced but only with extreme difficulty. This makes the statistical reports from European countries more exact and more convincing.

However, I do not wish you to get the impression that the work in Stockholm, Munich, or Paris is superior to that done in the other parts of the world especially the work done by certain American investigators, but because facilities at hand and the conditions under which they work make it possible for these European investigators to provide statistical reports more accurate and more convincing in character. I have followed the work of these various European centers, applied their methods in the treatment of my own cases, and even though it is not possible for me to present statistics of my own, due to the character of my patients and the difficulty in tracing them, I arrived at certain conclusions, for myself at least, that are of value to me, and it is the purpose of this paper to present these observations and conclusions for what they are worth, feeling that they may be of some value to you in arriving at your own conclusions, and mapping out your own plan of treatment in this serious disease.

I realize that it is extremely difficult in determining the values of various forms of treatment in carcinoma because of the necessity of

*Read before Section on Radiology of Illinois State Medical Society, May 6, 1931, E. St. Louis.

waiting for five years before arriving at conclusions concerning the different forms of treatment, and that it is also extremely difficult to compare statistics from various clinics because the cases are not always classified on the same basis, a Stage 1 case or a Stage 2 case in one clinic may be entirely different from that in another clinic. The relative proportion of far-advanced to early cases in one locality may be considerably different from that in another, depending upon economic and social conditions.

Not more than ten years ago, however, it was not uncommon for cases of cervical carcinoma to be treated with fifty milligrams of radium for twenty hours in a capsule of one m. m. of brass and the results considered to be quite satisfactory. In contrast to this certain other clinics were advising an enormous dosage of radium for a short length of time—one or two hours, and yet again other therapists were depending upon the use of x-ray alone.

With the elapse of time and the accumulation of statistics, better methods of treatment of proven value have been evolved.

First let me describe the plan of treatment as it has been worked out by Dr. Heyman at the Radium Hemmett at Stockholm. The work there was started by Forssell in 1910, and in the beginning fifteen to twenty milligrams of radium filtered by five-tenths to one and a half millimeters of silver were used. The treatments were repeated every three to six weeks up to ten times. These frequent treatments with small doses and weak filtration often caused sloughing not only of the cancer itself but of the surrounding tissues with frequent formation of recto-vaginal fistulas. Temporary improvement only was achieved. Heavier filtration was then used and a less frequent number of applications with larger doses and more satisfactory healing was achieved.

By 1914 they had established a technic which has been followed out almost without change ever since. This consists of three treatments, using one hundred to one hundred and twenty milligrams of radium, with a filtration of three millimeters of lead with an interval of one week between the first two applications and an interval of three weeks between the last two with a total irradiation of sixty hours—that is six thousand milligram hours. Three millimeters of lead fil-

tration is approximately the equivalent of one and one-half millimeters of platinum. In the three treatments approximately twenty-two hundred to twenty-six hundred milligram hours is given in the uterine canal and forty-five hundred milligram hours in the vagina.

In their opinion the vaginal application is just as important or more important than the intra-uterine application and the important thing is to cover the whole surface of the growth with radium at each application. In the intrauterine application the whole uterine fundus must be filled with radium applicators.

They have little confidence in supplementary deep x-ray therapy applied from the outside and depend almost exclusively on the intrauterine and intravaginal applications. It is interesting to note, however, that during the past two or three years they are paying more attention to the external application of penetrating x-rays. Heyman is able to report on seven hundred and thirty cases that have been treated for more than five years and have found on the total number of cases, 23.1 per cent cured after a five-year period. Of this group, one hundred and eight were what he considered in the operable class and at the end of five years 43.6 per cent of these were well.

There are, of course, differences of opinion and different plans of treatment in the various German Clinics, but Munich I believe, is fairly representative of German thought and practice. In Germany, because of the expense of radium or radioactive substances deep x-ray has been developed considerably beyond that found in other countries. However, I believe that it is safe for me to say that the German investigators have been convinced after a number of years of observation that x-rays delivered to the pelvis from the outside, no matter how penetrating, are alone insufficient in the treatment of uterine carcinoma; that intrauterine and intravaginal application of radium in addition to the external radiation is necessary for the production of consistent results. They use fifty-five milligrams of radium or mesothorium filtered by one m. m. brass in the uterine canal for twenty-four to thirty hours, making a total of fifteen hundred milligram hours which they consider a maximum dose. Please recall that the radium application

as practised at Stockholm consists of twenty-two to twenty-six hundred milligram hours in the uterine canal and forty-five hundred milligram hours applied in the vagina, filter of three m. m. lead, or the approximate of one and one-half m.m. of platinum. In Germany they depend chiefly upon the external roentgenotherapy.

In two hundred and twenty-seven operable cases treated by radiation (a combination of a comparatively small amount of intrauterine and intravaginal radium with extremely efficient external roentgenotherapy), 40.5 per cent were cured. Forty-four of these cases did not complete the treatment, leaving one hundred and sixty-three, and the survival rate on the basis of five years in this group was 50.2 per cent; certainly a most satisfactory showing.

Of three hundred and ten Stage 2 cases, 22.3 per cent were cured. With the deduction of fifty cases that did not complete the treatment, the survival rate in this group is increased to 28.3 per cent. In a group of five hundred and forty-three Stage 3 cases (that is inoperable) where radium alone was used, 8.9 per cent were cured; where radium was combined with x-ray, 13.2 per cent were cured—quite a remarkable difference. In the inoperable cases the x-rays applied from the outside are of greatest value. This is quite in accord with the pathology of the condition present and treated. If the lesion is small and localized it can be successfully coped with by the radium alone but the radium rays are not effective far out from the active source. In these cases in which there is an involvement of the broad ligaments, glands, etc. x-rays applied from the outside have their greatest value.

In an analysis of all the cases at Munich, that is 1,216, two hundred and twenty-two, or 18.2 per cent were cured. However, in those cases where radioactive substance alone was used, 14.0 per cent only were cured, while in the cases where the combined treatment was given, that is radium together with the external application of penetrating x-rays, 21.4 per cent were cured. However, in analyzing the results it is well to remember that the radium therapy at Munich according to our present ideas, would be considered decidedly inadequate.

The work at the Curie Foundation, Paris, did not really get under way until a considerably

later period than that in Sweden and Germany. In fact not until the spring of 1919, and did not become well established until two years later. However, the French were in a position to take advantage of the previous efforts made elsewhere, and have the advantage of a very close association with the Radium Institute under Madame Curie. They also have the advantage of having a relatively large supply of radium available for clinical and experimental work. However, it is quite interesting to note that in spite of the fact that they have such a large quantity of radium, that the essential plan of treatment at the Curie Foundation of Paris consists of small doses of radium, heavy filtration and a prolonged period of time of application. They abandoned the plan that is still in use in certain centers in this country of extremely large quantities of radium for extremely short periods of time, that is an hour or so. From my observations at least, the small dose of radium with heavy filtration for the prolonged period of time produces infinitely better results than the large dose of radium or emanation for a short period of time, even though the milligram hour dosage is practically the same.

In Paris they feel that the general condition of the patient is of more importance than the extent of the lesion—it is a question of whether or not the patient can stand the heavy and prolonged dosage.

The technic employed at the Radium Institute of Paris is not as yet fixed in the way it has become fixed and established at Stockholm. Dr. Heyman at Stockholm feels that until something better is offered than their plan of treatment they will continue to use their present methods.

In Paris they feel that a certain amount of experimentation is not only justified but necessary, and of course in dealing with a condition such as uterine carcinoma where the ultimate decision is based upon five year statistics, statistics must necessarily lag about five years behind theories of treatment.

While the technic at Paris has been modified several times since 1919 it remains substantially the same, but each of the changes has been guided by definite experimental, histological and biological study. The essential condition of homo-

geneous radiation and the administration of a dose sufficiently strong to destroy all the cancer cells with the production of a minimum amount of injury to healthy tissues has remained throughout. The dose, that is in milligram hours has been increased considerably by increasing the number of centers of radiation, decreasing the individual content of each tube of radium and increasing the amount of filtration supplemented by unusually prolonged x-ray therapy. The filtration used in the intrauterine application of radium is one millimeter of platinum and one and one-half millimeters of platinum is used in the vagina. This corresponds quite closely to the three millimeters of lead filtration used at Stockholm. In the x-ray treatment, 200 K. V. is used, the filter is one to two millimeters of copper, and the skin focal distance is usually sixty to eighty centimeters over a field about twenty by twenty centimeters in size with a duration of from five to eight hours—considerably more than is customarily used in this country or even in Germany.

In the radium treatment approximately 33.3 mgs. of radium are used in the uterus in three capsules, and 33.3 mgs. of radium used in the vagina in three capsules, with a total dosage of almost eight thousand milligram hours, given in a period of elapsed time of approximately five days.

In France as in Germany, they feel very decidedly that the intravaginal application of radium is as important as the intrauterine, and that supplementary penetrating x-rays from the outside are absolutely essential, particularly in the cases beyond the first stage.

Perfectly-planned and perfectly executed irradiation from the inside with radium and with x-ray from the outside is absolutely essential to produce successful results. This has become axiomatic.

In many cases in Paris instead of using the external roentgentherapy, radium at a distance is used. In these cases they apply four grams of radium at ten centimeters distance from the skin with a filtration of one millimeter of platinum, using eight fields and the treatment is of eighty hours duration, approximately three hundred and twenty thousand milligram hours. Whether the radium pack at a distance is more

effective than the deep x-ray therapy has not as yet been determined.

As far as statistical results are concerned, the best results are shown for the year 1923 and they all feel at Paris that the methods now applied are infinitely better at present than used at that time. This assumption I feel is certainly justified. In all eighty-five cases treated in 1923 they report thirty per cent. cures.

The statistical information presented in this paper has been taken from the report of the Cancer Commission, Radiological Sub Commission of the League of Nations published in 1929. The subject matter of the paper is the result of personal visits and observations to these clinics, and subsequent application of the various methods in a large enough group of cases, approximately two hundred, to warrant personal conclusions.

It is my opinion that the best and most representative radium therapy in carcinoma of the uterine cervix is represented by the work at Stockholm; by far the most satisfactory and best developed roentgentherapy has been developed in Germany; the most progressive application of both methods, that is the application of radium and application of x-rays, is represented by the work being done at the present time in France.

Conclusions—Radiation therapy for carcinoma of the uterine cervix calls for prolonged application, not hours but days, high filtration, multiple centers of application with multiple units of radium to thoroughly cover the lesion. Vaginal application is even more important than intrauterine. A small dose of radium, fifty grams, applied in the uterine canal for twenty hours—one thousand milligram hours—is useless. For thorough application of the radium to cover the lesion flexible radium applicators are necessary. So-called combined applicators are inefficient.

Early diagnosis and early treatment are essential; because of the dangers of heavy dosage over long periods of time, special training in the application of radium and x-rays in the treatment of carcinoma of the cervix is absolutely essential.

DISCUSSION

Dr. Harold Swanberg, (Quincy): Dr. Pettit has given us a very fine résumé of radiation methods as used in the leading European clinics and we should be very grateful to him for the presentation. It seems,

however, there is a great deal of missionary work to be accomplished in this country to convince many surgeons in regard to the efficacy of radiation therapy in uterine cervical cancer.

I think one of the most effective means we can use in convincing the general profession, as to the value of radiation methods, is to continually quote statements from the leading surgical centers. For example: we all know that Rochester is not essentially a radiation clinic. It is a great surgical clinic, yet their statistics show, year after year, that they seldom revert to surgery in the treatment of cancer of the cervix. Just a few weeks ago, the 1930 report of gynecologic surgery of the Mayo Clinic was published. This report disclosed, that during this period 261 cases of cancer of the cervix were treated and only 8 operations were performed. It stated further that for several years they have not operated upon more than 8 such patients in any one year. This means that surgery, as a method of treatment for cancer of the cervix, has virtually been abandoned by America's largest surgical clinic.

One of the largest clinics in Germany is the University of Munich. Since 1913 not a single case of cancer of the cervix has been operated upon there, the entire brunt of the treatment being borne by x-ray and radium therapy. From 1913 to 1928, 2,203 patients suffering from cervical cancer were treated by radiation methods.

A few weeks ago there appeared in Nelson's Loose-Leaf Surgery the latest report from the Regaud clinic at the University of Paris. This report, based upon five-year studies of carcinoma of the cervix treated by radiation methods, shows that of the entire 1924 group (the last one upon which five-year studies were available), thirty-five per cent. were alive and free from cancer. The statement is also made in this report that they believe future five-year studies will probably show a forty per cent. salvage. It should also be borne in mind that while compiling these studies at the Regaud Clinic, all cases lost track of, or dying from other diseases during the interval, were classified as radiation failures.

I agree with Doctor Pettit's conclusion in regard to the necessity of heavy filtration and treatment over comparatively long periods of time, as yielding the best result in the management of this disease. We, too, reached this conclusion after several years' experience with different technics, and I am sure that our results today are better than ever before. Furthermore, since the adoption of the heavy filtration technic we have not been troubled with any fistula formations.

In closing, I wish to emphasize the importance of high voltage x-ray therapy in addition to radium, in advanced cases. When treating carcinoma of the cervix, if we cannot get our radium applicators within two centimeters of the growth, we cannot hope to control the lesion with radium alone. When administering x-ray radiation, we favor its preceding the utero-vaginal application of heavily filtered radium from multiple centers.

PARALYTIC ILEUS AND TETANY OF TOXIC ORIGIN FOLLOWING APPENDECTOMY A CASE REPORT

ERICH H. BUKOFZER, M. D.

CHICAGO

A latent tonsillitis, which developed into a "septic sore throat" after an ordinary appendectomy, was the cause of a paralytic ileus and ensuing tetany in the case to be reported. Because of the fact, that the variety of symptoms bore so many similarities to manifold complications, and so many possibilities to diagnostic and therapeutic errors were given, a summarizing description of the case appears to be justified.

On March 12, 1931, W. S., 26 years old, German, complaining of constant pain in the right lower quadrant of the abdomen presented the following findings by physical examination:

Appearance: White, male, 6' 1", of pale yellow color of the skin, face shows very pronounced features with deep drawn out lines (facies abdominalis), chest and muscular layers very poorly developed, posture, somewhat bent forward.

Impression of sickly, unambitious person.

Head, neck: Essentially negative except for slight enlargement of tonsils, which do not appear to be reddened nor acutely ulcerated.

Chest: Lungs: Essentially negative.

Heart: Reveals a slight mitral murmur.

Abdomen: Musculature feels somewhat rigid, especially over McBurney's point. Great tenderness and subjective pain noted on slightest pressure.

Extremities: Negative.

A diagnosis of chronic recurrent appendicitis was made, and the patient advised to have appendix removed. The operation was performed the following day at the Edgewater Hospital of Chicago.

The laboratory findings before operation did not reveal any particular abnormalities:

Blood: Hb. 90%, white cell count 12,800; polymorphs 70%, eosinophils 2%; small lymphocytes 10%, large 8%.

Urinalysis: Specific gravity 1,020, color yellow; transparency cloudy, reaction alkaline, albumin and glucose negative.

Microscopic examination of urine: Amorphous crystals and yeast cells.

The operation was performed under ethylene-ether narcosis in the usual manner: The appendix was amputated, and large circular adhesions around the cecum were divided between ligatures, the abdominal wall closed in anatomical layers. The removed appendix

was slightly hardened and covered with fibrous connective tissue.

Postoperative course:

Day of operation: Administration of 1000 c. c. of Ringer's solution every six hours by hypodermoclysis and calcium gluconate (Sandoz) 10 c. c. intravenously. The abdomen feels soft, and the patient is able to pass urine freely; does not complain of any discomfort. Temperature 98.6.

First postoperative day: Temperature increased to 101.6, pulse 108, respiration 22. Immediate inspection of wound does not disclose any discoloration nor apparent changes. The abdomen itself is flat. Patient is able to pass flatus. Throat examination: Tonsils swollen without any purulent changes, pharynx greatly reddened. Patient is urged to gargle frequently. Intravenous injections of saline solution 500 c. c. given at six hourly intervals. Evening temperature rises to 102.6, pulse 134, respiration 24.

Second postoperative day: Temperature remains high, 102, pulse 130, respiration 24, abdomen is slightly distended, which distention disappears promptly after insertion of colon tube. Patient is able to pass flatus and some fecal matter. Calcium gluconate 10 c. c. administered intravenously. Temperature decreases to 100, pulse remains high—140, respiration 24. Digifoline (one ampule) given hypodermically and aspirin compound by mouth. Patient feels somewhat better towards evening.

Third postoperative day: Temperature 102. Abdomen is very largely distended. Pituitrin and digifoline administered hypodermically. The wound inspection shows some purulent discharge from the incision. The infection of the incision appears to be restricted to the external layers. Sutures are immediately removed and gauze drains, dipped in Antivirus (Besredka), and iodoform gauze inserted into the wound. Hot applications over incision. During following hour patient vomits greenish mucus and is very restless. Repeated lavages of the stomach result in temporary cessation of vomiting. Pulse very rapid, above 140. 500 c. c. of saline with contents of one ampule of digifoline given intravenously. At the same time caffeine and camphor injected hypodermically. The abdomen continues to distend, and the patient grows more and more restless. Peristalsis over the abdomen can neither be heard nor felt. In spite of all procedures temperature climbs up to 104.2, and continues rising. Calcium chloride and calcium lactate administered intravenously as soon as patient shows signs of tetany characterized by trismus and clonic convulsions of the hands (main en griffe). The pulse is imperceptible; adrenalin and ephedrine fail to improve the pulse quality; oxygen with 9 percent. carbon dioxide inhalation intensifies the difficulties in breathing. Finally the patient expires in the early afternoon.

Post mortem examination (abdominal cavity permitted only):

Body of an adult white male, 26 years of age, 182 cm. in length. Rigor mortis not present except for slight rigidity of jaw.

Abdomen: Swollen, drum like distended, presents an incision (right rectus) of 9 cm. in length in the right lower quadrant of the abdomen, into which a goose egg sized part of the large bowel protrudes. The protruded cecum is bloody suggillated; to both sides there are iodoform gauze drains to be seen, which are inserted into the wound. Skin and superficial fascia are covered with pseudomembranous purulent effusions of greenish color.

Situs abdominis: A moderate amount of fibrinous purulent shreds cover the ileum and mesentery. The appendix has been removed. Sutures intact. Very slight inflammatory manifestations seen at the ileocecal valve. The jejunum shows besides pseudomembranous purulent effusions marked hemorrhages beneath the serosa. The upper part of the descending colon is largely inflated. The middle part of the descending colon is completely strictured in an extension of 10 cm. Below this strictured area the sigmoid and rectum appear inflated.

Intestines: The small intestines, especially the duodenum, show distention and on inner surface very large congestions and infarctions. The heights of the villi are of almost purple color; duodenum and jejunum, also lower parts of ileum show hemorrhagic infarction. The ileo-cecal valve does not show any changes except a slight distention; the inverted stump of the appendix is slightly reddened. On opening the lower parts of the small intestines some liquid feces and discolored blood are evacuated.

The formerly mentioned constricted part of the descending colon shows on inner surface several from pin point to pea sized hemorrhages. A white line of demarkation signifies the contracted area.

Stomach: Shows two contractions at the middle part of the larger curvature. The contents consist of a bloody, greenish fluid of foul odor. The mucosa presents many hemorrhagic extravasations.

Mesentery: The blood vessels of the mesentery are somewhat engorged but do not show any thrombus formations.

Spleen: Soft, covered with a moderate amount of fibrin. On cut section the pulp is somewhat softened, and the follicles are prominent.

Liver: Appears restricted above the costal margin (about two finger breadths). On cut section the lobuli are not very distinct. A few light brown areas are to be observed (Anemic areas).

Kidneys: Are freely movable within their fatty capsules. The fibrous capsules strip easily. The cortices show a few congenital lobulations. A slight visibility of stellate veins characterizes presence of hyperemia. The kidney pelvis are dislocated to the upper medial regions. On cut section the cortices and medullae are not very distinct.

Gallbladder: Appears largely distended. The common duct is very large. The portal vein empties some foamy bloody fluid.

Pathological diagnosis: Paralytic ileus of descending colon. Pseudomembranous fibrinous generalized

peritonitis. Phlegmonous infiltration of skin, fascia and muscle around incision.

Bacteriological diagnosis: Streptococcus hemolyticus.

COMMENT: The case is very interesting from many angles. The rapidity with which the infection spread, the apparent unusefulness of all postoperative measures to prevent ileus, and the speedy progress of the ileus itself with final tetany represent quite unusual sequelae to a so-called "normal appendectomy."

Symptomatology: The prodromal symptoms of a fast developing ileus did not appear as to pain and vomiting. The patient never complained of any severe pain, but of a more or less insignificant, uncomfortable feeling, which is complained of by almost any surgical patient. The location of a "dull feeling" in the abdomen was given in the lower part rather than in the upper, quite different from the usual complaint in acute blockage. The so-called initial vomiting was absent. Vomitus appeared shortly before the end, more as a reflectory reaction of the celiac plexus. Of the cardinal symptoms of ileus only two were present (during the last two hours): Apathy and difficulties in breathing.

Etiology: A toxemia originated by streptococcus hemolyticus was the cause.

Histological aspect: The appendix itself revealed the typical picture of a chronic recurrent appendicitis. Incidentally, sections of the distal end showed vast hyperchromatic, perivascular lymphatic and polymorph collections, so that one may interpret those as a superimposing bacterial invasion.

The sections through the intestinal wall after post mortem examination were subjected to an oxydase reaction to show the great amount of polynuclear leucocytes in the muscular layers. The oxydase reaction having properties to show leucocytic accumulations better than the ordinary H. E. staining was used to observe the dispersion of leucocytes throughout the intestinal wall. In fact a very large number of leucocytes was found in the muscular layers, and consequently one might deduct that a direct emigration of streptococci took place through the stigmata of the intestinal wall.

Bacteriological aspect: The very virulent strain of streptococcus hemolyticus (cultures taken from the tonsils and post mortem specimens) must have been dormant in the chronic-

ally enlarged tonsils. The patient having been in a somewhat weakened condition, probably was about to develop a "septic sore throat," and the subjection to an inhalation anesthesia possibly stimulated the septic process. During the narcosis the stagnation of saliva and regurgitated stomach contents formed an ideal culture medium for bacterial growth. The dissemination of the infection was evidenced by the increase in temperature and pulse rate, facts which prohibited the early diagnosis of an approaching ileus.

As to the classification and virulence of the streptococcal strain, the cultures of the throat as well as the ones taken from the peritoneum grew pure streptococcus hemolyticus.

According to Buerger and Much the phagocytosis of less virulent types of streptococcus is by far greater than of a highly virulent one. Our conclusion of direct diffusion of the streptococci through the intestinal wall stands absolutely in conformity with the histological findings in the oxydase reaction. (Leucocytes unable to check the emigration of streptococci.)

The toxin of this very virulent streptococcus acted upon the body similarly to a calcium binding chemical. The pathological changes were almost identical to those observed in oxalic acid poisonings as recently described by Hennemeyer.

The odd disturbances of metabolism and nervous system created by the toxemia will be discussed in the following part.

Physiological aspect: Immediately upon diagnosis of calcium deficiency manifested by tetanic convulsions the previously routinely administered amount of calcium was largely increased. The tetany followed the first profuse vomiting, thus the first symptom of disturbed acid base equilibrium was recognized.

The recent experimental work on calcium metabolism of various authors could be summarized in two important statements concerning the origin of intestinal tetany:

1. In partial obstruction of the intestinal tract the congested areas produce great quantities of calcium, which cannot be absorbed properly, therefore leading to a formation of an insoluble calcium soap.

2. The excessive loss of blood chlorides brings about an increase in calcium antagonists with

ensuing disturbance of the acid-base equilibrium.

Both conclusions confirm the findings of the reported case: The excessive production of calcium led to a stasis of insoluble calcium in the upper intestines and unbalanced at the same time the blood and tissue constituents so severely, that the calcium antagonists prevailed such as: carbon dioxide combining power of plasma, potassium and urea nitrogen. Furthermore, the calcium antagonistic chemism caused a stimulation of the sympathetic nervous system, which ended in an adynamic ileus. A vicious circle was created by all these changes, thereby leaving no way of correct conclusion whether the decrease of blood chlorides, then the adynamic ileus by stimulation of the sympathetic nervous system and following calcium deficiency took place in this order or vice versa.

Apparently the carbon dioxide produced by the intestinal stagnation was increased by the therapeutic inhalative administration of oxygen with 9 per cent. carbon dioxide to relieve difficulties in breathing. The tetanic convulsions became more severe under this treatment. This way the opposite result was obtained against expectations.

Further *pathological-physiological findings* might be of interest: The post mortem examination revealed bloody infarctions of the mucosa of stomach and duodenum. These observations sustain *Mueller's* theory that adynamic ileus results in a diminution of peristalsis and hypersecretion of the upper intestines and stomach; a relaxation of the pylorus then leads to regurgitation of gastric contents. The hemorrhages of the heights of the villi in our case confirm *Mueller's* statement and also explain the hypersecretion of calcium of the higher intestinal tract, causing the rapid calcium deficiency in the blood stream.

Therapeutic considerations: The sad experiences of the described case urge certain postulates concerning surgical proficiency in preventing incidents of adynamic ileus following kryptogenic infections. It must be emphasized that there prevails a great fallacy in judgment of surgical risk by mere routine laboratory procedures before operation. Blood-chemistry, especially determination of blood-plasma-chlorides and calcium contents would have given more

information concerning the stability of the patient. The blood picture alone is not invariably the safest leader for consideration of surgical risks.

Hypertonic sodium chloride solutions were not given, for the simple reason that naturally the ordinary postoperative measures were refuted to. It might be of value to inject routinely hypertonic salt solutions with 25 per cent glucose after operations, since a loss of blood chlorides is to be expected in any surgical procedure.

It will remain an unsolved question whether a spinal or rectal anesthesia would have prevented the fatal outcome of the case.

Summary: A case of adynamic ileus combined with tetany following appendectomy was described with all postoperative incidents, and epicritical considerations were discussed.

4753 Broadway.

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USE OF MECHANICAL MEASURES IN TREATMENT OF OBSTINATE EDEMA

In eight cases of extensive edema, mostly the result of congestive heart failure and resistant to medical therapeutic measures, Edward F. Bland and Paul D. White, Boston (*Journal A. M. A.*, Nov. 15, 1930), have employed Southey's tubes inserted into the edematous subcutaneous tissue of the legs or scrotum. In two of the patients the results were strikingly beneficial, following the removal of 16 liters in the course of two days in one case, and 9 liters in three and one-half days in another. In three patients there was moderate relief; in one case only slight improvement was noted; the remaining two patients were not relieved. In suitable cases the use of Southey's tubes is a valuable therapeutic procedure, and the authors believe that the employment of this method as recommended many years ago by Reginald Southey should be revived.

RENAL GLYCOSURIA AND PENTOSURIA.—

Harold W. Jones and Walter Sussman (*American Journal of the Medical Sciences*, 173:513, April, 1927).

Renal glycosuria and essential pentosuria, clinically present similar features. Pentose and dextrose cannot be differentiated by the use of the usual reduction tests. Bial's test is useful, but not always accurate in the differentiation.

The differential diagnosis between renal glycosuria and diabetes mellitus is made by the blood sugar estimation; by the blood sugar tolerance test, and by the estimation of the respiratory quotient after carbohydrate ingestion. The authors emphasize the necessity of a more careful differentiation.

Renal diabetes might be included in the group of conditions designated as "inborn errors of metabolism," pentosuria, cystinuria, alkaptonuria and hematuria congenita.

THE THYROID GLAND AND AVIATION

A malfunctioning thyroid gland should be considered a disqualifying factor in the examination of aviation candidates.

Old pilots who show symptoms of malfunction of the thyroid should not be allowed to participate in pursuit or attack maneuvers nor in prolonged cross-country flights. There is likely to be ocular imbalance and a tendency to nervous exhaustion.—MAJ. A. M. BRAILSFORD, M.C., U. S. A., in *Military Surgeon*, August, 1929.

THE WASSERMANN REACTION

A fixed positive blood Wassermann reaction, persisting in spite of regular and active treatment, means continued activity of the syphilitic disease in the patient presenting this reaction.

Cases having a titration of 32 or higher may be assumed to be Wassermann-fast; that is, the reaction either returns to its former strength as soon as treatment is discontinued or it cannot be changed to a negative by any treatment that the patient can or will endure.—LT. COL. E. B. VEDDER, M.C., U. S. A., in *Military Surgeon*, August, 1929.

SOME NEWER REMEDIES IN TREATMENT OF PERNICIOUS ANEMIA

Raphael Isaacs and Cyrus C. Sturgis, Ann Arbor, Mich. (*Journal A. M. A.*, Aug. 23, 1930), assert that dried, defatted hog stomach may be used as a therapeutic agent in inducing and maintaining a remission in patients with pernicious anemia. A remission may be induced with dried material (15 Gm.) corresponding to 100 Gm. of fresh stomach, and the remission may be maintained with 7 Gm. of this material. However, a safe clinical dosage is 10 Gm. for each million red blood cell deficit in the red blood cell count. The maintenance dose is 10 Gm. from five to seven times a week. So far no gross differences have been noted in the clinical features of the liver-induced remission and that after stomach therapy.

APHORISMS FOR DOCTORS

Physicians may often use selected aphorisms in their writings in order to enhance the appearance of erudition on part of the authors, and to afford breathing spells on part of the readers. During the past year or two the New York State Journal of Medicine has used nearly every one of the following aphorisms compiled by Glenn Compton, and printed in the New York Herald Tribune of May first, and will probably use them over again next year:

"The rolling stone collects no moss;
Gambling throws you for a loss;
Nor borrower nor lender be;
A stitch in time saves two or three,
Or six or eight or maybe nine;
In bottles old put no new wine;
Play not with fire, for it will burn;
The road is long that does not turn;
Handsome is as handsome does;
There's nothing new, there never was;
Cross no bridges in advance;
The highest bliss is ignorance;
Put something by for rainy days;
Let not thy head be turned by praise;
The child is father to the man;
It can be done, you know it can;
Burn not the candle at both ends;
For all your sins make full amends;
Spare the rod and spoil the child;
Be not by siren's lures beguiled;
Great oaks from little acorns grow;
Man wants but little here below;
A barking canine never bites;
A brave man down gets up and fights;
The dead goose lays no golden egg;
A hole that's round fits no square peg;
As you sow so shall you reap;
Always look before you leap;
A friend in need's a friend indeed;
Of the morrow take no heed;
'Tis an ill wind blows no good;
Great men are misunderstood;
Rome was built not in a day;
While the sun shines make thee hay;
Enchantment is by distance lent;
Rich men seldom are content;
To thy proper self be true;
Credit give where it is due;
For no man wait the tide and time,
And here's the reason for my rhyme:
A little nonsense now and then
Is relished by the best of men."

SPECIMEN CONTAINERS

The close-covered, impervious paper boxes of various sizes, used for packing ice cream in the retail trade, make very satisfactory containers for sputum, feces and other similar specimens submitted for laboratory examination. They cost less than one cent each and can be burned after being used once.

THE TEN COMMANDMENTS OF CANCER*

1. Do not cut across a cancer and leave part behind. The part remaining will grow more rapidly than if you had left it alone, altogether.

2. An operation for cancer is an operation to save life. Cosmetic results are to be considered, but they are not to be weighed against recurrence and death a few years later.

3. Never manipulate a cancer roughly either before or during operation or more often than is necessary to make a diagnosis. To do so is the easiest way to drive cells into the lymph or blood current—hence metastasis.

4. Do not let a woman drag you into her delusion that her early cancer symptoms are due to the menopause. The menopause is a normal physiological state, and if the woman's organs are healthy she will be healthy.

5. Repair every cervix that is eroded, everted or the seat of a discharge.

6. Do not rule out cancer because the patient is not old. About 10 per cent of cancers occur before thirty-eight.

7. Do not tell your patients they have cancer if you are sure they will follow your advice at once. If they are inclined to delay, tell them frankly what they have and what will be the consequence of delay. If they make their own choice, let it be done with full knowledge of facts and prospects. Tell the relatives or friends in any event.

8. To save your patients from cancer save them from delay. Do not wait for pain and cachexia—the signs of impending death.

9. Do not admit that incurable cancer is unrelievable cancer. Ligation, cautery, palliative removal, electrocoagulation, irradiation, and other proven physical methods may change distress to comfort and add months or years. The patient who appeals to you for relief is the one to be considered—not reputation or “the effect on the community.”

10. Be always on the watch for early suspicious symptoms. Be prompt to follow them to a definite diagnosis. Be courageous enough to insist on immediate proper treatment.

*From the Weekly Roster and Medical Digest (Philadelphia County Medical Society), June 29, 1929.

Marriages

DOUGLAS BOYD, Evanston, Ill., to Miss Marian Winthrop Taylor of Chicago, June 6.

EVA J. LINE, Niles Center, Ill., to Mr. Ardel Frownfelter of Chicago, in Diller, Neb., June 10.

HARRY M. LEVY to Miss Shirley Scharf, both of Chicago, June 14.

BEN Z. RAPPAPORT to Miss Sally Goldberg, both of Chicago, June 28.

HAROLD C. VORIS, Chicago, to Miss Ila

Thelma Knight of Evanston, Ill., in Salina, Kan., June 27.

LORENZ HENRY WESTENBERGER to Miss Theodora Isabel Warden, both of Chicago, June 9.

Personals

Dr. Joseph F. Bredeck, St. Louis, spoke on “Diagnosis of Tuberculosis” before the St. Clair County Medical Society, June 4.

Dr. Edwin M. Miller was elected president of the alumni association of Rush Medical College at its annual reunion, June 16, and Dr. Charles A. Parker, secretary.

Dr. Russell M. Wilder, chairman of the department of medicine at the University of Chicago since May, 1929, resigned July 1. He will continue as professor of medicine.

Dr. Samuel Kaplan, among others, spoke on “Blood Chemistry Study in Normal Pregnancy and Eclampsogenic Toxemia” before the Chicago Gynecological Society, June 19.

Dr. Irving S. Cutter, dean and professor of medicine, Northwestern University Medical School, received the honorary degree of doctor of laws from Jefferson Medical College, Philadelphia, at the recent commencement.

Dr. James A. Doull, professor of hygiene and public health, Western Reserve University School of Medicine, Cleveland, is visiting professor of bacteriology at the University of Chicago for the summer quarter.

Drs. Randolph O. Stites, Industry, and Frank P. Norbury, Jacksonville, among others, discussed undulant fever at the meeting of the McDonough County Medical Society, Macomb, June 9.

Dr. Harry A. Oberhelman, Chicago, spoke before the Peoria City Medical Society, June 16, on “Results of Personal Studies of 600 Breast Tumors.” The society had its annual picnic, June 25, at Michell Farm Sanitarium.

Drs. Sumner L. Koch and Francis J. Gerty, Chicago, addressed the La Salle County Medical Society, Wedron, June 17, on “Infections of the Hand” and “Emotional Changes as Symptoms of Mental Disease,” respectively.

Arthur Isaac Kendall, Dr.P.H., of the department of research bacteriology of Northwestern University Medical School, gave the James A. Patten lecture in bacteriology at the university,

July 22, "Observations upon the Filtrability of Bacteria, Including a Filtrable Organism Obtained from Cases of Influenza."

Dr. M. L. Folk has been appointed assistant professor of ophthalmology, University of Illinois, College of Medicine.

News Notes

—The McElwee Memorial Home for Destitute Crippled Children, on the University of Chicago Midway, was recently dedicated.

—Mrs. Elizabeth S. McElwee, who gave to the Home for Destitute Crippled Children funds for the new Nancy Adele McElwee building recently dedicated at the University of Chicago, has financed also the renovation of the old buildings of the home, which will now be used as an outpatient clinic. The university will provide professional care for the patients and will be free to use them for study.

—The Gertrude Dunn Hicks Memorial Hospital, the fourth unit for the care of sick children and the study of their diseases at the University of Chicago, was dedicated, June 22. The hospital, located near Billings Memorial hospital, has 50 beds, making the hospital facilities of the Midway medical center almost 600 beds. It was made possible by a gift of \$300,000 from Mrs. Gertrude Dunn Hicks.

—Physicians of Logan County gave a dinner, June 4, in Lincoln, for three physicians who have spent fifty years or more in practice: Drs. William V. Guttery, who has practiced in Middletown since 1881; Charles Rembe, Lincoln, and William Edgar McClelland, Beason. A set of clinical thermometers and a leather case were given to each.

—A graduate course in ophthalmology is to be given by members of the faculties of the four medical schools in Chicago, beginning September 1, to run for a year. Lectures and clinics will be held at the four universities and ten hospitals on a rotating schedule. Didactic instruction will be given from 8 to 9:30 a. m. and from 5 to 6:30 p. m.; clinical instruction will be given between 10 a. m. and noon and between 2 and 4 p. m. The course is limited to twelve students. The fee is \$1,000, of which \$100 is to be paid on application. Further information may be

obtained from Dr. Richard C. Gamble, secretary, 30 North Michigan Avenue, Chicago.

—Dr. Frederick Tice and Dr. Allan J. Hruby have recently been appointed to the Board of Directors of the Municipal Tuberculosis Sanitarium. Dr. Tice is President and Dr. Hruby is Secretary.

—The Consulting Staff of the Municipal Tuberculosis Sanitarium has been reorganized and the staff, as at present constituted, is as follows: Dr. Charles S. Bacon, Obstetrics; Dr. E. J. Berkheiser, Orthopedics; Dr. Carroll E. Cook, Roentgenology; Dr. Jerome R. Head, Surgery; Dr. John M. Krasa, Ophthalmology; Dr. Francis L. Lederer, Ear, Nose and Throat; Dr. Clement L. Martin, Proctology; Dr. Eugene T. McEnery, Pediatrics; Dr. Dorin F. Rudnick, Genitourinary; Dr. Frank Smithies, Gastroenterology; Dr. Clarence McMullen, Diabetes; Dr. Arthur W. Stillians, Dermatology; Dr. Henry B. Thomas, Orthopedics; Dr. Irving Treiger, Cardiologist.

Deaths

GIDEON LANNING BARBER, Chicago; Hering Medical College, Chicago, 1894; aged 87; died, June 14, of aortic stenosis and chronic nephritis.

HENRY WILLIAM FRED BARTELLS, Chicago; Rush Medical College, Chicago, 1885; aged 68; died, June 25, in St. Elizabeth's Hospital, of cerebral hemorrhage.

GEORGE WILLIAM BOOT, Evanston, Ill.; Sioux City College of Medicine, 1893; University of Pennsylvania School of Medicine, Philadelphia, 1898; member of the American Academy of Ophthalmology and Oto-Laryngology and the American College of Surgeons; formerly assistant professor of laryngology and otology, Rush Medical College, Chicago, and assistant professor of laryngology, University of Illinois College of Medicine; aged 61; on the staffs of the Children's Memorial Hospital, Durand Hospital, Cook County Hospital, Illinois Eye and Ear Infirmary, and the Grant Hospital, Chicago, and St. Francis' Hospital, Evanston, where he died, June 14, of septicemia and diabetes mellitus.

JOHN JOSEPH BOWES, Peoria, Ill.; Medical Department of Drake University, Des Moines, 1900; served during the World War; on the staff of the Peoria State Hospital; aged 54; died, May 9.

EARL J. BROWN, Chicago; Jenner Medical College, Chicago, 1903; member of the Illinois State Medical Society; aged 67; died, June 8, of chronic myocarditis and cholecystitis.

G. W. CAMPBELL, Flora, Ill.; University of Tennessee College of Medicine, Memphis, 1909; a member of Illinois State Medical Society, president of Xenia State Bank; president of school board; State Senator, 1912-

18; died at Olney Sanitarium, May 9, following an operation for gall stones.

JAMES EDWARD CAMPBELL, Peoria, Ill.; Northwestern University Medical School, 1908; member of Illinois State Medical Society; on staff of John C. Proctor Hospital; aged 59; died, June 30, at the home of his son, Dr. Orwood J. Campbell, in Minneapolis, of cerebral thrombosis.

HOWARD ROY CHISLETT, Chicago; Hahnemann Medical College and Hospital, Chicago, 1888; formerly clinical professor of surgery at his alma mater; member of the American College of Surgeons; on the staff of the Chicago Memorial Hospital; aged 69; died suddenly, June 13, of coronary thrombosis.

ALICE BUTLER CROY, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1898; aged 64; died, May 26, in the Chicago State Hospital, of cerebral arteriosclerosis.

FRANK OZRO ELLIOTT, Chicago; Harvey Medical College, Chicago, 1902; aged 60; died, June 6, in the Woodlawn Hospital, of uremia and carbon tetrachloride poisoning.

WALTER EUGENE FOSTER, Richmond, Ill.; University of Michigan Medical School, 1900; a member of Illinois State Medical Society; aged 55; died, June 1, after a long illness.

SAMUEL HANCOCK, West Frankfort, Ill.; Missouri College of Medicine and Science, St. Louis, 1903; a member of Illinois State Medical Society; aged 57; died, June 22, in Union Hospital, following operation for appendicitis.

HERMAN J. HENSLEY, Yates City, Ill.; Rush Medical College, Chicago, 1887; formerly mayor of Yates City; aged 67; died, May 25, in the Proctor Hospital, Peoria.

HENRY C. KERBER, Chicago; Rush Medical College, 1877; was one of the oldest members of the Chicago Medical Society. His early surgical career, cut short by an accident, was followed by many years of devotion to the practice of internal medicine and research, in which he established an enviable reputation. His death occurred July 19, at the age of 75, from gallstones and myocarditis.

MARION SHMULEONA FINKEL KOGAN, Chicago; Odessa State Medical Institute, Odessa, Ukraine, Russia, 1922; aged 33; died, June 10, in the Mount Sinai Hospital of peritonitis following an episiotomy.

BAYLESS B. LANG, Roodhouse, Ill.; Eclectic Medical Institute, Cincinnati, 1873; aged 78; died, June 30, of chronic myocarditis, nephritis and arteriosclerosis.

ROSCOE LEWIS, Carbondale, Ill.; St. Louis College of Physicians and Surgeons, 1904; member of the Illinois State Medical Society; aged 48; died, May 27, of coronary thrombosis.

GEORGE ALBERT LIERLE, Barry, Ill.; Missouri Medical College, St. Louis, 1898; aged 54; died, June 24, of broncho-pneumonia and heart disease.

LUTHER MARTIN MARVEL, Weldon, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; past president

of the Dewitt County Medical Society; aged 58; died, June 14, in the Warner Hospital, Clinton, of injuries received when the automobile in which he was driving was struck by a train.

ROBERT JACKSON MCCONNELL, Baylis, Ill.; Keokuk (Iowa) Medical College, 1891; member of the Illinois State Medical Society; aged 63; died, June 18, of a self-inflicted bullet wound.

CHARLES W. MCPHERSON, Polo, Ill.; Rush Medical College, 1882; a member of Illinois State Medical Society; aged 60; died, June 30, of chronic myocarditis.

HARRY MEISSLER, Chicago; Northwestern University Medical School, Chicago, 1917; member of the Illinois State Medical Society; aged 41; died, June 7, in the Wesley Memorial Hospital, of pneumonia.

JOHN HENRY MILLER, Pana, Ill.; Missouri Medical College, St. Louis, 1880; a former president of the Illinois State Medical Society and of the Medical Society of Central Illinois; president of Pana Carnegie Schuyler library board; aged 76; died, May 5.

MAURICE SINCERE, Chicago; Bellevue Hospital Medical College, 1888; aged 65; died, July 15, of septicemia resulting from a carbuncle.

WILLIS STEARNS, Pomona, Ill.; Missouri College of Medicine and Science, St. Louis, 1891; a practitioner in Pomona for 40 years; aged 70; died, June 28, in Holden Hospital, of cerebral hemorrhage.

DANIEL A. K. STEELE, Sarasota, Fla.; Northwestern University Medical School, 1873; a practitioner of medicine and surgery for 50 years; one of the founders of the College of Physicians and Surgeons in Chicago, 1882; and largely instrumental in the affiliation of that school with the University of Illinois; president and dean of the faculty, professor of surgery for many years; one of the founders of the University Hospital and of the American College of Surgeons, and member of the board of governors; one of the founders of the Medico-Legal Society of Chicago; president of Chicago Medical Society in 1884; president of medical staff, Cook County Hospital, 1887-1890. Dr. Steele held numerous positions of trust and responsibility previous to his retirement 8 years ago and was honored with the degree of LL.D. by the University of Illinois in 1906. He died, July 19, in Sarasota, where he had resided since retirement, at the age of 79.

JOSEPH J. STERN, Chicago; Chicago College of Medicine and Surgery, 1916; aged 57; died, May 3, in the Michael Reese Hospital, of heart disease.

STANISLAUS VON MARTINITZ, Chicago (licensed, Iowa, 1886); aged 85; died, June 29, of myocarditis.

PLUMER MORTON WOODWORTH, Altadena, Calif.; Chicago Medical College, 1878; member of the Illinois State Medical Society; at one time president of the Lincoln Park Board, Chicago; formerly on the staffs of St. Joseph's Hospital and the U. S. Marine Hospital, Chicago; one of the organizers of the Augustana Hospital and the Morris Porter Hospital, later named the Children's Memorial Hospital; aged 80; died, July 6, of epithelioma.

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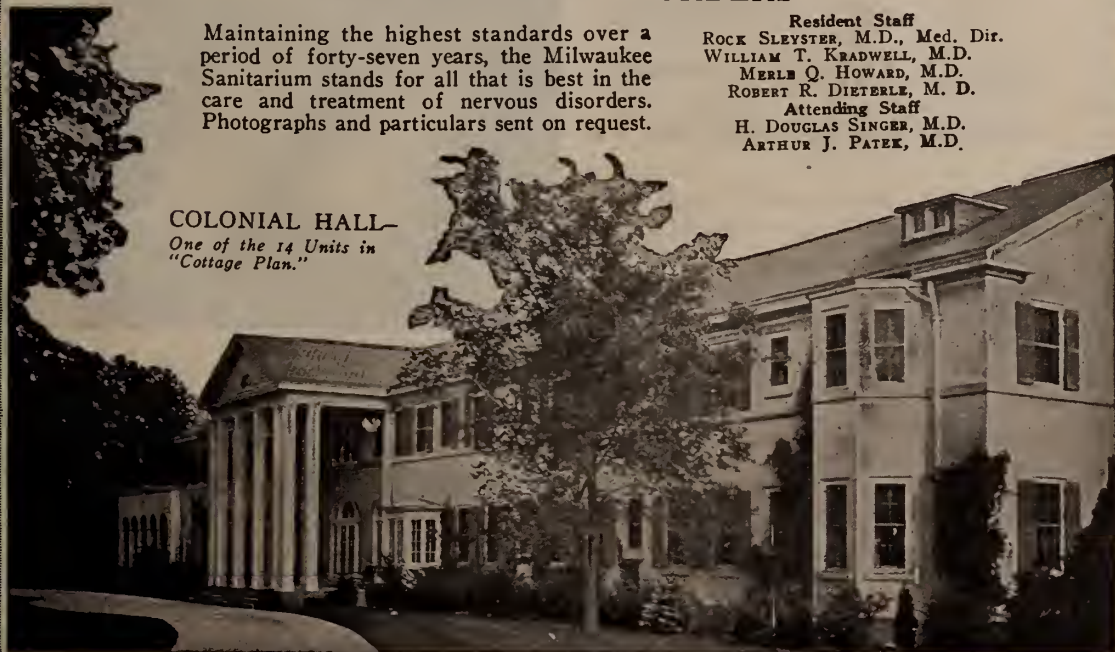
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Membership correspondence to Dr. Harold M. Camp, Monmouth, Ill.

Society proceedings and news items and changes in the mailing list to Dr. Henry G. Ohls, Managing Editor, 1618 Juneway Terrace, Chicago.

Contributors will submit all copy for publication typewritten on standard size paper and double spaced. Copy not complying with this rule will be returned, if convenient.

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Editorials

EARLY DIAGNOSIS AND PROMPT TREATMENT OF POLIOMYELITIS THE NEED OF THE HOUR

Poliomyelitis is steadily on the increase. Up to the present time in 1931 approximately 1200 cases have appeared throughout the country. Its prevalence and seriousness demands immediate recognition and drastic treatment.

Poliomyelitis,—acute, infectious, systemic and with or without paralysis, is prevalent and perilous.

Early treatment is the only edge that the medical profession has upon this truly frightful disease. Speedy suspicion, definite diagnosis and immediate isolation are the three vital indications against the spread of this malignant pest. Eternal vigilance is as much the watchword against poliomyelitis as it is against national defense. For poliomyelitis is a scourge that minimizes the safety-line of adult age, literally striking relentlessly from the cradle to the grave.

Nor does it seem to be affected by geography or economics.

Although called oftenest to the laity under the name of "infantile paralysis" there are as many if not more cases of poliomyelitis that never reach the paralytic stage as there are those that do.

While the calendar year is never entirely free from cases of poliomyelitis annually the late summer and early autumn seem to bring simultaneous epidemics in almost every section of this country. So far as is known the infection is primarily that of the respiratory system. It is as much a disease of wealth as it is of poverty.

Many doctors fail to recognize poliomyelitis in its early stages and thereby defeat subsequent successful cure. This is because they refuse to consider the probability of poliomyelitis if paralysis is absent. As a matter of fact, vast numbers of cases of anterior poliomyelitis never reach the paralytic stage.

This acute, general infection involves the cen-

tral nervous system, and oftenest attacks young children.

Poliomyelitis appears to prefer summer to winter for its attacks. In the disastrous late summer epidemic of 1916, New York City alone saw over 9,000 cases and 2,448 deaths.

But death is not the greatest horror accompanying infantile paralysis. The evil poliomyelitis wreaks is not interred with the bones of victims, but lives on and in and with them. Semi-invalidism and lifelong deformity are the consequences of unfortunately treated because tardily recognized poliomyelitis.

In fact the entire attack upon poliomyelitis resolves itself into these three main factors:

1. Early recognition.
2. Isolation of patient.
3. Rest and symptomatic treatment.

Paralysis may ensue within a few hours of the onset of the attack and as the success of serum treatment depends upon its administration prior to the appearance of paralysis, the one point to be drummed home with everyone is the need for early recognition. Any evidence of muscle injury should receive especial attention. Deformity occurs quickly and spreads rapidly.

Frequently there are two stages in the preliminary systems of the disease.

Headache and drowsiness present generally the first symptoms. Usually there are other symptoms associated ordinarily with simple gastro-intestinal upsets, such as nausea, vomiting, slight fever and frequently constipation, or occasionally diarrhea. This condition will last for a day—perhaps two. The patient feels better and passes off the attack as just one of those things to which human life is naturally heir and for which home medication is competent and sufficient. But in from three days to a week another story is told. There is a re-appearance of symptoms this time accompanied by slight stiffness of the neck or of spinal muscles and by muscle pain that makes the child resent being moved or disturbed. *This is the stage when the disease is invading the central nervous system and the time when if successful treatment is to be effected it must be applied. And even at this time, so vague, so insidious are the approaches of the scourge that clinical picture and clinical history alone where the unversed are concerned may not yield accurate diagnosis and*

in case of doubt or for confirmation have recourse to spinal punctures.

This lumbar puncture however should be attempted only by one skilled in its technic and then only after due consideration.

Rest must go hand in hand with the Serum Treatment.

The U. S. Public Health Service has classified poliomyelitis as 1. Cases with characteristic paralysis;

2. Cases without paralysis but exhibiting symptoms indicative of meningeal irritation and usually of minor disturbance of motor centers that are the so-called abortive cases;

3. Cases that have symptoms similar to the initial symptoms of known cases of infantile paralysis but without definite involvement of the central nervous system—are very common cases indeed.

The specific infection is as prevalent as measles. But it has been considered capable of the establishment of immunity without manifestation of recognizable symptoms.

Let it be emphasized that onset of infantile paralysis is characterized almost invariably by a rise of temperature, and the next common symptom is gastro-intestinal disturbances. There is general malaise, headache, restlessness and irritability followed by drowsiness with a disinclination to move the body or to be moved. There is a stiffness of the neck and spine, indicated by the position the patient takes in bed and by complaint of pain when the spine is flexed. The tendon reflexes are usually abnormal and there may be marked tremor or ataxia with muscular weakness. The paralysis that occurs usually in two or three days from the onset of illness is a flaccid motor paralysis not accompanied by loss of sensation. The legs are more frequently affected than the arms; occasionally the muscles of the palate are affected, or the visional muscles or the external rectus muscles of the eye. In fatal cases, death is due to paralysis of the muscles of respiration usually preceded by progressive paralysis of the extremities.

Well has it been said that efforts must be directed toward limiting the extent of injury by placing the patient at rest as completely as possible. Massage of the paralyzed muscles is harmful. *Rest is the most important thing of all in the acute stage of the disease.* When the

convalescent stage begins, usually in about six weeks, gentle massage and passive movement may be used, but they are capable of doing harm as well as good. A trained orthopedic surgeon at this stage should be consulted to lay out a plan of treatment. *Manipulations practiced by chiropractors and other cults should be avoided absolutely.* There is every reason to believe that rough handling of the spine will render impossible the recovery of some affected tissue which otherwise would take place. Not only are the patients injured by the manipulations of cults, but those things are omitted which may be expected to prevent the occurrence of deformity.

Diagnosis may usually be established by lumbar puncture, but this should be attempted only by one skilled in its technic and then only after consideration as to whether the benefit will justify the procedure.

THE STATE BOARD OF HEALTH HAS AVAILABLE A SUPPLY OF CON- VALESCENT POLIOMYELITIS SERUM

With poliomyelitis spreading insidiously throughout the country it is fortunate for residents of Illinois that the Illinois State Department of Public Health has available an adequate supply of convalescent poliomyelitis human serum as well as of sodium citrate.

Instructions for the use of the serum accompany each vial of serum and each package of sodium citrate. There is no charge made for either. In addition where such service is practicable a physician from the State Department of Public Health, especially qualified in this field, will, if requested, be detailed both to consult with the local physician and to assist in the administration of the serum.

Since 1910 when Netter advocated the use of convalescent poliomyelitis serum the burden of supply has been allowed to fall largely upon research institutions rather than upon its legitimate bearers—the public health departments. Collection of convalescent poliomyelitis serum entails time, effort and expense. Yet it is the indicated palliation and nearest remedy for the scourge that has been proven to be the most important cause of disability among the 16,000 physically handicapped children in Illinois. Evidence indicates that this convalescent serum if

used in time will prevent the paralysis of poliomyelitis.

HENCE PHYSICIANS MUST NOT NEGLECT ITS USE WHEN AVAILABLE UNDER ANY CIRCUMSTANCES.

The use of sodium citrate is indicated when physicians wish to use whole blood therapy for intramuscular administration. The sodium citrate prevents coagulation prior to use of blood drawn from donors. This whole blood therapy is of value in poliomyelitis cases, and also of unquestionable benefit in aborting measles as well as in their prevention. Let it be repeated however that too much emphasis cannot be placed upon the need for the prophylactic use of convalescent serum for susceptible contacts. These serums are of practical therapeutic importance even in the absence of controls.

EVERY ONE SHOULD BE ALERT AT EVERY MOMENT TO THE POSSIBIL- ITY OF INFANTILE PARALYSIS

Family physicians and public health department employees everywhere should be at attention every moment, alert to the most infinitesimal suggestion of infantile paralysis.

Parents generally and supervising corps in charge of juvenile institutions should be sent simple yet specific warning as to the virulency, insidiousness and ubiquity of this common and mutilating disease. Since early diagnosis is the best weapon with which poliomyelitis can be met with and fought outright, and possibly conquered, here again is eternal vigilance the price of even comparative safety.

Thanks to general precautions the nearest approach to an epidemic so far this season has been in New York City. On July 25 there were recorded 195 definitely known cases. This did not include the remarkably large number of cases of poliomyelitis in one of its many stages that are difficult, ay, even impossible for the inexperienced or rather unfamiliarized physician to recognize. By August 4, 1931, this number of cases in New York City had increased to 800. City health stations immediately opened stations to take blood from convalescents from the disease, since convalescent blood serum is the one tested remedy, and a fairly sure one, if used early enough.

The disease has been slowly increasing. The first week in August, 1931, Chicago reported

six cases; Washington, seven; Detroit, five; Boston, seven; New Haven, eighteen, and New Orleans, Buffalo, Los Angeles, and St. Paul, a case apiece.

No age is immune from infantile paralysis. What seems to be a trivial malaise may be the dread scourge itself. Restlessness, drowsiness, fever, irritability, nausea, constipation or diarrhea, pains in the back, neck, arms and legs, stiff neck and spine call for immediate isolation, rest in bed and a physician. Serum will check the disease. Even in cases of paralysis—that does not always ensue—death may not result, but what is almost inevitable is mutilation or invalidism of the body requiring much time and effort for attempted re-education, that is rarely successful.

NINE PRE-PARALYSIS SYMPTOMS OR DIAGNOSTIC POINTS IN POLIOMYELITIS

A special advisory committee appointed by the president of the Medical Society of the State of New York,—Dr. W. D. Johnson of Batavia—has been more than busy with the current epidemic in that section.

Realizing the importance of speedy recognition, and of accurate diagnosis prior to the appearance of characteristic paralysis this committee compiled a list of nine especial symptoms (N. Y. State J. M., Aug. 5, 1931) to be sought for in the pre-paralytic stage. Suggestion was made that the nine symptoms or diagnostic points be copied and carried about on the prescription pads of physicians who have had experience with comparatively few cases of poliomyelitis and hence might overlook any one of the salient symptoms of poliomyelitis.

As set down these symptoms run:

1. FEVER — Never high. Average of 102° F.

2. HEADACHE—Severe. Frequently general. May be nuchal. If absent replaced by severe back pain.

3. RIGIDITY OF NECK—Distinct resistance to anterior flexion. Rarely is there retraction and never lateral limitation.

4. TREMOR—Fine trembling of lips and hands, especially on movement, as when taking

a glass of water. There may also be coarse twitching in the sleep.

5. APATHY—Patients are mildly indifferent and drowsy—never comatose. Perfectly bright and alert when aroused but then sometimes irritable.

6. VOMITING—Once or twice on the first day. Rarely persistent or severe, *YET vomiting is often severe as an initial symptom in the bulbar types.*

7. RETENTION OF URINE—When questioned the mother or patient often remarks a twelve to twenty-four period without urination. It never demands catheterization.

8. CONSTIPATION — Almost uniformly present.

9. SWEATING—Rarely profuse. Seen usually as beading about lips and neck.

OUTSTANDING TRIAD — Headache, tremor, stiff neck. Entire pre-paralytic picture presents clinical entity with symptoms definitely those of a mild meningitis.

Prevention is the one safe, sure cure for poliomyelitis but when prevention fails and the fearful malady presents itself in a community the next best thing, in fact the one alternative is immediate recognition and drastic action.

AN ANALYSIS OF PHYSICIANS' INCOME AND EXPENSES

Domestic Commerce gives the following data relative to Physicians' income and expenditures:

"Annual expenditures of doctors for professional purposes range on the average from \$7,091 for radiologists to \$3,239 for general practitioners, according to a survey by *Medical Economics*, reported in Trends and Indications. Annual purchases of surgical instruments and supplies range from \$1,115 to \$264 for the different kinds of doctors, while similar expenditures for medicines and pharmaceuticals range from an average of \$1,064 to \$201 each year.

"General practitioners had an average net income of \$4,188, the lowest of the group, while surgeons with an average net income of \$9,233 annually were highest. The ratio of general practitioners to specialists for all groups was reported to be 204 to 1."

UNDER GROUP PRACTICE THE COST OF MEDICAL CARE IS LIKELY TO BE INCREASED

Dr. Ray Lyman Wilbur, chairman of the committee on the "Cost of Medical Care" in the *Public Ledger*, Philadelphia, under date of March 22, 1931, makes the following statement relative to "Group Clinics" as an aid to the solution of the so-called increasing cost of medical care. We quote:

"The present use of the term 'clinic' is quite different from its original definition of 'a medical lecture at the bedside or in the presence of patient.' The present conception of a group clinic is an association of specialists for the purpose of group diagnosis. Medical care, or the treatment of patients, is a minor function of these groups. If medical care is to be handled by a group of physicians, the cost to the patient is likely to be greater than under the care of the family physician or general practitioner. Co-operative service may offer a partial solution but there is always a danger of disturbing that intimate relationship between physician and patient which has been one of the distinct attractions of medical practice.

"The increasing cost of medical care is due to a number of factors in which the physician's fee is often given undue prominence. All medical education at the present time is directed toward a more comprehensive training of the general practitioner. A particular need is the education of the public for a better appreciation of the services of the family physician and that only in exceptional cases is a specialist required. Group practice is still to be regarded as an experiment. Whether it will solve the problem of more economic medical service remains to be determined."

ANNUAL MEETING OF WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

The Fifth Annual Meeting of the Woman's Auxiliary to the Illinois State Medical Society held in East St. Louis May 5, 6 and 7, 1931, was attended by representatives from thirty-three counties. There were 16 delegates present from County Auxiliaries and presidents of nine

organized counties were in attendance and gave reports.

An open meeting for all members and guests was held at 9 o'clock Wednesday morning at which time reports of officers and committee chairmen were given and the business and policies of the organization were discussed. The revised constitution was presented by the revisions committee, and with a few minor changes was adopted. The report of the nominating committee was received and the following officers and councilors were elected: President, Mrs. T. O. Freeman; President Elect, Mrs. E. W. Mueller; First Vice, Mrs. W. D. Chapman; Second Vice, Mrs. Solomon Jones; Third Vice, Mrs. A. H. Baugher; Corresponding Secretary, Mrs. S. E. Allen; Recording Secretary, Mrs. M. O. Wilkins; Treasurer, Mrs. A. H. Brumbach; Councilors: First District, Mrs. D. J. Evans; Second District, Mrs. A. D. Middleton; Third District, Mrs. E. R. Steen, Mrs. S. M. Goldberger, Mrs. H. M. Peterson; Fourth District, Mrs. C. H. Anderson; Fifth District, Mrs. H. B. Henkel; Seventh District, Mrs. C. M. Jack; Eighth District, Mrs. H. I. Conn; Tenth District, Mrs. C. O. Boynton.

The Ladies' Entertainment Committee had planned a program of varied interests for the visiting ladies and the wonderful success of the meeting was due to their untiring efforts.

At 1 o'clock on Wednesday the St. Clair County physicians wives entertained the visiting ladies at luncheon at the St. Clair Country Club. This was a most enjoyable affair. Mrs. McGlothlan, president of the Woman's Auxiliary to the American Medical Association was our honored guest and gave a very interesting address on the work and aims of the Woman's Auxiliary. The one aim which she stressed most was the introduction of the Magazine *Hygeia* to the public. Mrs. McGlothlan said:

"It is my earnest desire that every state and county president and *Hygeia* chairman will do her utmost to promote *Hygeia* this year. I shall be quite disappointed if we fail in this most important phase of our work, which is the plan inaugurated by the American Medical Association to educate the public to the viewpoint of the M. D.

Do we wish the laity to have the scientific

viewpoint, or do we prefer to have their thinking shaped only by the unscientific literature constantly falling into their hands? Our answer will be the effort which we put into our educational work.

The promotion of *Hygeia* is the special work in education that the American Medical Association has requested us to do. Let's do it.

GREETINGS FROM YOUR NEW STATE PRESIDENT
OF THE WOMAN'S AUXILIARY

To all who were privileged to attend the Annual Meeting of the National Auxiliary in Philadelphia it was evident that the Woman's Auxiliary to the Medical Association is a going concern and one that is proving itself of value.

The State Meeting in East St. Louis was well attended and an increasing interest in Auxiliary affairs was manifested.

For the summer activity some Auxiliaries are having picnic suppers either in a near by park or in the home of some member. One which was very successful in a social way was held in the flower garden of one of the members with the husbands as invited guests.

The program for the year 1931-32 is to be largely educational. This of course will mean that our Auxiliaries will be somewhat like study clubs, but we hope that we can make them so interesting that no one will want to miss one meeting.

Each month the program committee will send to each Auxiliary suggestions and material for study and discussion. The subjects which we have under consideration are the following:

1—Contagious Disease Control with emphasis on Smallpox.

2—Legislation—Medical Practice Act. When Legislature meets—What bills, etc.

3—Health Talks that are being broadcast.

4—Survey of Magazines with regard to their presentation of Medical Practices, costs, etc.

5—Some Economic Aspects of the Practice of Medicine.

6—Child Welfare and Examination of School Children.

7—A thorough Study of the Magazine *Hygeia*.

8—List of books (fiction) written by doctors or about doctors with review of several.

With these topics each month will be sent one or more prepared papers discussing the subject,

with a list of sources of information on the same.

This program is only suggestive to you. If your Auxiliary wishes to take up any other or wishes to follow any other line of work, the officers and committee chairman of the State Auxiliary will be glad to do anything they can to help you with your own program.

If you have in mind a topic to add to this program we have outlined we shall be glad to have your suggestions.

Mrs. T. O. Freeman.

ARE WE FACING SOCIAL CONTROL OF SICKNESS TREATMENT?

The committee on the study of dental practice of the American Dental Association is conducting a study of all phases of sickness insurance in Europe and America.

The committee feels that in the proposed investigation of medical insurance to attempt the separation of the dental from the medical phases would be impossible. The interests of the profession concerned are not and cannot be dissociated. The committee states "that it is fundamental for the profession to realize that whatever happens to the medical profession is, for the dental profession, in the nature of a prediction."

We quote the following from the report of the committee:

"Call it 'Sickness' or 'Health Insurance,' the 'Panel System,' or 'State Medicine,' no legislation has so greatly affected so many people as that for the social control of the treatment of disease. No section has been so deeply affected as the different branches of the professions dealing with the treatment of disease. This applies almost equally to physicians, dentists, nurses and to nearly all the institutions concerned with human ills.

"These various divisions of the *medical profession* must suffer or profit together from the workings of such legislation. It is impossible to separate their fates, even in discussion, and certainly not in programs of action. To emphasize this solidarity the words '*medical profession*' are used to include all those so affected.

"Since Bismark compelled the enactment of the first compulsory social insurance laws in 1883, similar laws have been enacted in practically every known European nation, in Japan and several South American countries, and are under favorable consideration in nearly all other countries, including Canada, Australia and South Africa.

"The International Labor Conference, which includes every nation belonging to the League of Nations, at

its meeting in 1927, adopted an agreement binding all members to introduce *compulsory* sickness insurance as soon as possible.

"While much is made of the distinction between '*compulsory*' and '*voluntary*' systems, there are few of the latter without many compulsory features. The difference in degree is so slight that it is hard to draw the line between them, especially as the voluntary systems are constantly adding compulsory features.

"In the United States, workmen's compensation laws have already given us a system of compulsory accident insurance in all but four states, while a constantly increasing number of states are extending these laws to cover 'occupational diseases.' Many features of compulsory insurance treatment have also been included in recent veterans' legislation. All of these measures affect the practice of dentistry.

"The tendency of such legislation was foreseen by the American Medical Association almost as soon as it began. A report of the Judicial Committee of that Association, which was adopted by the House of Delegates at the San Francisco meeting in June, 1915, made this remarkable analysis and forecast:

"The passing of these laws does not mean that some new or special law has been passed to compensate an injured workman under the old common law system, but it means an entirely new legal and social conception of compensation for injury and is, in fact, the beginning of a new social and economic condition in this country.

* * * * *

"The Council further realizes that in the near future the majority of medical men in this country must face a new social condition in connection with the laws of workmen's compensation in accident and probably in disease. In whatever country the social equilibrium has been upset by new laws on compensation there have followed in the wake of compensation for accidents other insurances tending toward the complete insurance systems of England and Germany."

"All forms of insurance tend to expand to cover new classes, to give more generous compensation and to extend any service once offered. In Germany this tendency has reached a point where but five per cent. of the medical profession is engaged in private practice. This percentage is higher in other countries having sickness insurance, but in few does it reach fifty per cent.

"This matter falls within the jurisdiction of state legislatures. There are forty-eight of these and it will be a miracle if some do not soon make the experiment, especially in time of industrial depression, which always produces social legislation.

"Such a change would deeply affect the income, professional standards, methods of work, freedom of practice, all relations with patients and nearly every other feature of the lives of all the physicians and dentists, whether they come directly under the operation of the law or not. There is hot dispute as to the nature of these effects. Opponents declare that such legislation degrades the entire healing profession, encourages

malingerer, reduces incomes, leads to superficial, stereotyped treatment after hasty diagnosis, introduces lay control of professional matters and generally demoralizes all relations with the patient. Advocates urge that it brings increased income, especially to the beginning practitioner, that it brings medical care within the reach of large masses hitherto excluded, makes early diagnosis universally possible, and leads to general betterment of health conditions.

"Part of this disagreement is due to the multitude of insurance systems. These differ, not only as to countries, but every system changes constantly and produces different results at different times. In planning a program in relation to such legislation it is of paramount importance to know whether a certain good or evil result is inherent in the insurance system, or is peculiar to certain times and places. It is also important to know whether the good results can be obtained by other means and especially whether, if insurance is pressed upon this country, it is possible for an organized medical profession to secure such provisions as will avoid its evils.

"It is to obtain the information that will help the entire *medical profession* to meet this possible threat in such a way as to utilize any action that may result to the best interests of the public and the profession that the Committee on the Study of Dental Practice of the American Dental Association is conducting a study of all phases of sickness insurance in Europe and America."

EDUCATIONAL COMMITTEE ILLINOIS STATE MEDICAL SOCIETY

JUNE, JULY AND AUGUST, 1931

SPEAKERS' BUREAU:

19—Requests for speakers from ten types of groups—

Women's Clubs

Rotary Clubs

High School Assemblies

Teachers' Institutes

Hospital Staffs

Nurses Associations

Kiwanis Clubs

Public Meetings on Diphtheria Immunization

Home Bureaus

Y. M. C. A.

These appointments were filled by the following members of the Illinois State Medical Society: H. A. Felts, T. P. Foley, J. J. Donahue, R. O. Hawthorne, G. C. Otrich, W. K. Ford, Aaron Arkin, George W. Irwin, Stuart Adler, Andy Hall, Paul Weber, J. C. Krafft, Robinson Bosworth, E. E. Edmondson, W. D. Chapman, Harold M. Camp.

Physicians of Illinois are requested to let lay

groups in their communities know that the Educational Committee sponsors a Speakers' Bureau for the purpose of supplying health programs.

SCIENTIFIC PROGRAMS:

Do You Know That

The Scientific Service and Educational Committees will arrange programs for your county medical society?

The office of the Educational Committee will send out newspaper announcements of your scientific programs?

The office of the Educational Committee will send out notices of your scientific meetings to your members and physicians of adjoining counties?

This service is yours for the asking?

Scientific programs were arranged for the following counties:

LaSalle—Francis J. Gerty, Sumner L. Koch.

Douglas—Frederick B. Balmer.

Schuyler—George deTarnowsky.

Pike—R. O. Stites.

Warren—Philip Kreuscher, Clinic for Crippled Children.

RADIO:

131—Radio talks were given during this three months period. Note the following timely topics which were discussed by members of the Chicago Medical Society during the four regular weekly broadcasts from WGN and WJJD:

Cyril Hale—Nervousness.

William J. Pickett—Hernia.

Albert W. Seidel—Care of the Baby in Summer.

C. H. Christoph—Sinus Infections and Swimming.

Samuel Taub—Bronchial Asthma, Its Causes and Prevention.

Charles F. Sawyer—Some Facts About the Gall Bladder.

Guy S. VanAlstyne—Abdominal Pain.

William R. Cubbins—Emergency Care of Fractures.

Samuel J. Taub—Hay Fever.

L. Schultz—Lesions of the Mouth.

L. A. Juhnke—Human Death Rate.

B. Barker Beeson—Cancer of the Skin.

Aaron Arkin—What Is Cancer?

William A. Brams—Heart Disease, Its Causes and Prevention.

Hiram J. Smith—Popular Fallacies Concerning Catarract.

Harold A. Rosenbaum—Throat Infections.

Emil J. Stein—Focal Infections.

Earl H. Thomas—Teeth and Health.

Chester C. Guy—Infections and Other Hazards of Swimming; How to Enjoy Your Vacation.

Andrew McNally, Jr.—Cancer.

Harold W. Miller—Obstetrical Necessities.

Sidney A. Portis—The Evils of Constipation.

Howard Wakefield—Heart Disease.

Clement L. Martin—Rectal Diseases.

John P. Coughlin—Functional Convulsions.

Frank Smithies—Indigestion.

J. J. Pflock—The Dangers of Unsupervised Reducing.

F. A. Anderson—Prevention of Disease in Its Most Common Forms.

A. F. Byfield—Indigestion.

Walter S. Siewerth—Goiter.

John B. Haeblerlin—Keeping Fit Through the Liver.

George Milles—Migraine.

Virgil R. Stephens—First Aid in Automobile Accidents.

John A. Wolfer—Gallstones.

George C. Turner—Focal Infections.

Gilbert P. Pond—Mental Development During Childhood.

Frederick C. Test—Some Common Affections of the Joints.

A. L. Williams—Diets for Hot Weather.

Joseph M. Blake—Problems of the Hotel Physician.

J. Roscoe Harry—A Plain Talk About Your Heart.

J. Frank Waugh—Skin Diseases Prevalent in Summer.

Clarence W. Rainey—Children's Eyes.

M. Edward Healy—Body Weight.

Glenn J. Greenwood—Adenoids.

Frederick B. Balmer—Menaces to Health.

Arthur H. Conley—Painful Feet.

Clarence Neymann—The Relation of Extroversion and Introversion to Insanity.

Samuel M. Feinberg—Hay Fever.

R. F. Weissbrenner—Immunization as Health Insurance.

Wm. A. Rosenberg—Ringworm.

PRESS SERVICE:

1,763—Health articles were released to Illinois newspapers.

1,396—Regular press service.

77—Articles released on monthly health column service.

115—Infantile Paralysis articles sent to editors of community newspapers where cases were reported.

One editor writes: "Wish to thank you for your special letter in regard to infantile paralysis. As one or two cases are reported in Schuyler County, I am sure it will be of special interest to our readers."

12—Newspapers in St. Clair and Montgomery Counties re Typhoid Fever.

35—Newspapers in DuPage, Lake, Logan, Rock Island, McHenry Counties, re Whooping Cough.

48—Newspapers, re meeting Madison County Medical Society.

59—Newspapers, re LaSalle County Medical Society.

19—Newspapers, re Summer Round-Up.

2—Association of Commerce, Chicago Medical Society.

35—Health Educational Articles written and approved:

Angina Pectoris.
Lack of Appetite.
Pellagra.
Health and Comfort in Hot Weather.
Fatigue.
Cataracts.
Sun Bathing.
Sinus Infection and Swimming.
Our Emotions.
Pre-School Child.
Tapeworm.
Rectal Diseases.
Noise and Health.
Body Weight.
Animals May Transmit Disease to Man.
Hives.
Postmortem Examination.
Sweating.
Dandruff.
Migraine.
When the Boy or Girl Goes to Camp.
No Cathartics.
Protection Against Smallpox.
Cancer of the Kidney.
Goitre.
Silent Sicknesses.
Functional Convulsions.
Derangements of the Joints.
Superfluous Hair.
In Business for Your Health.
Doctor Kohn and Tuberculosis.
School Begins.
Anesthesia.
Adenoids.
Cutting Down Communicable Disease.

MISCELLANEOUS:

Mr. W. Lawrence Shaw of the American Library Association asked for information about the work of the Educational Committee, particularly interested in the radio programs.

35—Folders of material sent out to speakers and others desiring use of our package library service.

Doctor Andy Hall devoted almost an entire page in the August 15 issue of the Health Messenger to an article explaining the services of the Educational Committee. Several requests

came in following the publication of this article, among them the following:

"We read with much interest the article in the Illinois Health Messenger of August 15, 1931 which gives an account of the services offered by your Educational Committee.

"The Committee on Education and Publicity of the San Francisco Heart Association is particularly interested in your lecture and radio work. Have you any radio broadcasts on heart disease and allied subjects which they would be permitted to use in connection with their weekly broadcast on the prevention and relief of heart disease? And do you use the dialogue form of radio broadcast?"

"Any help or suggestions along this line in the development of their publicity campaign would be greatly appreciated.

"For your information the San Francisco Heart Association was organized in 1930 to combat heart disease. The Association is sponsored by the local County Medical Society, the Community Chest and the San Francisco Tuberculosis Association."

ANNUAL MEETING OF INTER-STATE POST GRADUATE MEDICAL ASSOCIATION OF NORTH AMERICA

The International Assembly of the Inter-State Post Graduate Medical Association of North America will be held in Milwaukee Auditorium, Milwaukee, Wisconsin, October 19-20-21-22-23, 1931.

PROGRAM

Monday, October 19, 8 A. M.

Diagnostic Clinic (Medical). Dr. Elsworth S. Smith, St. Louis, Mo.

Diagnostic Clinic (Obstetrical). Dr. Irvin Abell, Louisville, Ky.

Diagnostic Clinic (Medical). Dr. Harlow Brooks, New York, N. Y.

Diagnostic Clinic (Surgical). Dr. Frank H. Lahey, Director, Boston, Mass.

Intermission for Review of Exhibits

Diagnostic Clinic (Pediatric). Dr. Alan G. Brown, Toronto, Canada.

Diagnostic Clinic (Medical). Dr. Henry A. Christian, Boston, Mass.

Address: "Chronic Arthritis as an Economic Human Problem." Dr. Robert B. Osgood, John B. & Buckminster Brown, Boston, Mass.

Noon Intermission

1:00 P. M.

THE THYROID GLAND

Address: "The Use of Iodin in Graves' Disease." Dr. Clarence G. Toland, Los Angeles, Calif.

Address: "The Use of Iodin in Recurrent Exophthalmic Goiter." Dr. S. F. Haines, Rochester, Minn.

Address: "The Safeguards in the Technic of Operations on the Thyroid Gland." Dr. Robert S. Dinsmore, Cleveland, Ohio.

Address: "Thyroiditis." Dr. Frank H. Lahey, Boston, Mass.

Address: "Cardiac Irregularities Associated with Diseases of the Thyroid Gland." Dr. Elsworth S. Smith, St. Louis, Mo.

Intermission for Review of Exhibits

OBSTETRICS AND GYNECOLOGY

Address: "Retroversion of the Uterus, and Complete Prolapse of the Uterus." Dr. Irvin Abell, Louisville, Ky.

Address: "Conservative Treatment of Aclampsia." Dr. Otto H. Schwarz, St. Louis, Mo.

Motion Picture: "Suspension of the Uterus for Retro-Displacement." Dr. H. O. Jones, Chicago, Ill.

THE CIRCULATORY SYSTEM

Address: "Mechanism and Transmission of Heart Murmurs with a Special Consideration of 'The Unimportant Murmur.'" Dr. S. Marx White, Minneapolis, Minn.

Address: "Syphilitic Aortitis." Dr. William S. Middleton, Madison, Wisconsin.

Dinner Intermission

7:00 P. M.

Address: "Syndrome of Ayerza." Dr. William Sharp McCann, Rochester, N. Y.

Address: "Circulatory Failure in Acute Infectious Diseases." Dr. Charles A. Elliott, Chicago, Ill.

Address: "Heart Diseases in Children and Their Sequelae." Dr. Alan G. Brown, Toronto, Canada.

Address: "Prognosis of Hypertension." Dr. Louis Hamman, Baltimore, Md.

Address: "Coronary Thrombosis." Dr. Harlow Brooks, New York, N. Y.

Address: "The Diagnosis and Treatment of Adhesive Pericarditis." Dr. C. Sidney Burwell, Nashville, Tenn.

Address: "Aortic Lesions in Relation to Cardiac Physical Signs and Cardiac Function." Dr. Henry A. Christian, Boston, Mass.

Tuesday, October 20, 8 A. M.

Diagnostic Clinic (Surgical). Dr. John F. Erdmann, New York, N. Y.

Diagnostic Clinic: "Toxemias of Pregnancy" and "Antenatal Hemorrhage." Dr. P. Brooke Bland, Philadelphia, Pa.

Diagnostic Clinic (Surgical). Dr. John M. T. Finney, Baltimore, Md.

Diagnostic Clinic (Medical). Dr. Campbell P. Howard, Montreal, Canada.

Intermission for Review of Exhibits

Diagnostic Clinic (Surgical). Dr. F. N. G. Starr, Toronto, Canada.

Diagnostic Clinic (Oto-Laryngological). Dr. Samuel J. Crowe, Baltimore, Md.

Address: "Allergic Diseases." Dr. Warren T. Vaughan, Richmond, Virginia.

Noon Intermission

1:00 P. M.

THE GASTRO-INTESTINAL TRACT

Address: "Peptic Ulcer—A Review of Present Knowledge of Etiology, and Best Methods of Treatment." Dr. John M. T. Finney, Baltimore, Md.

Address: "Surgical Aspects of Carcinoma of the Rectum." Dr. John F. Erdmann, New York, N. Y.

Address: "Cancer of the Stomach." Dr. F. N. G. Starr, Toronto, Canada.

Address: "The Present Status of the Treatment of Hirschsprung's Disease." Dr. Fred W. Rankin, Rochester, Minn.

Address: "Does Peptic Ulcer Cause Permanent Disability?" Dr. William Gerry Morgan, Washington, D. C.

Intermission for Review of Exhibits

OTO-LARYNGOLOGY

Address: "Plastic Surgery of the Nose, Lips and Cheeks." Dr. Gordon B. New, Rochester, Minn.

Address: "Laryngitis." Dr. Fielding O. Lewis, Philadelphia, Pa.

Address: "Diseases of the Ear That Give Rise to Deafness." Dr. Samuel J. Crowe, Baltimore, Md.

Address: "Diagnosis and Treatment of Carcinoma of the Larynx." Dr. William V. Mullin, Cleveland, Ohio.

Address: "Congenital Syphilis." Dr. Isaac A. Abt, Chicago, Illinois.

Dinner Intermission

7:00 P. M.

MALIGNANT DISEASES

Address: "Malignant Diseases in Childhood." Dr. H. F. Helmholtz, Rochester, Minn.

Address: "Incidence, Diagnosis and Treatment of the Primary Malignant Tumors of Long Bones." Dr. Dean D. Lewis, Baltimore, Md.

Address: "Radiation Therapy in Intra-Oral Cancer with its Complications." Dr. James M. Martin, Dallas, Texas.

Address: "Infantile Paralysis." Dr. William McKim Marriott, St. Louis, Mo.

Address: "Etiology and Treatment of Low Back Pain from the Mechanistic (Orthopedic) Point of View." Dr. Arthur Steindler, Iowa City, Iowa.

Address: "Recent Advances in the Treatment of Nephritis." Dr. James S. McLester, Birmingham, Alabama.

Wednesday, October 21, 8 A. M.

Diagnostic Clinic (Surgical). Dr. Dean D. Lewis, Baltimore, Md.

Diagnostic Clinic (Medical). Dr. Leonard G. Rowntree, Rochester, Minn.

Diagnostic Clinic (Urological). Dr. Herman L. Kretschmer, Chicago, Ill.

Diagnostic Clinic (Surgical). Dr. Charles H. Frazier, Philadelphia, Pa.

Intermission for Review of Exhibits

Diagnostic Clinic (Surgical). Dr. William E. Lower, Cleveland, Ohio.

Address: "Choice of Anesthetic Methods in Different Types of Patients and Conditions." Dr. John S. Lundy, Rochester, Minn.

Address: "The Influence of Pain and Mortality in Modern Medical Practice." Dr. Charles H. Mayo, Rochester, Minn.

Noon Intermission

1:00 P. M.

Diagnostic Clinic (Surgical). Dr. Fred W. Rankin, Rochester, Minn.

UROLOGY

Address: "Conservative Plastic Procedure in Prostatic Hypertrophy." Dr. Joseph F. McCarthy, New York, N. Y.

Address: "Further Research Studies of the Factors Which Are Conducive to the Production of Prostatic Hypertrophy." Dr. William E. Lower, Cleveland, Ohio.

Address: "Treatment of Carcinoma of the Bladder." Dr. Herman L. Kretschmer, Chicago, Ill.

Address: "The Value and Limitations of Intravenous Pyelography in the Diagnosis of Renal and Ureteral Diseases." Dr. Bernard H. Nichols, Cleveland, Ohio.

Address: "Diagnosis and Treatment of Tumors of the Testicle." Dr. Charles C. Higgins, Cleveland, Ohio.

Intermission for Review of Exhibits

THE CENTRAL NERVOUS SYSTEM

Address: "Experience Gained in One Hundred Operations Under Local Anesthetic for the Permanent Cure of Trigeminal Neuralgia Major." Dr. William T. Coughlin, St. Louis, Mo.

Address: "Encephalography and Ventriculography—Methods and Interpretation." Dr. Charles H. Frazier, Philadelphia, Pa.

Dinner Intermission

7:00 P. M.

Address: "Symptomatology, Prognosis and Treatment of Minor Neuroses and Psychoses." Dr. Louis J. Karnosh, Cleveland, Ohio.

Address: "Pulsating Exophthalmos with Special Reference to Surgical Treatment." The Joseph Schneider Foundation Presentation. Dr. John M. Wheeler, New York, N. Y.

Address: "Suggestions From Medical Psychology in the Field of General Medicine." Dr. William A. White, Washington, D. C.

Address: "Water in Relation to Health and Disease." Dr. Leonard G. Rowntree, Rochester, Minn.

Address: "Water and Chemical Balance in Surgery." Dr. Thomas G. Orr, Kansas City, Kansas.

Thursday, October 22, 8 A. M.

Diagnostic Clinic (Surgical). Dr. Waltman Walters, Rochester, Minn.

Diagnostic Clinic (Medical). Dr. Russell L. Cecil, New York, N. Y.

Diagnostic Clinic (Pediatric). Dr. William McKim Marriott, St. Louis, Mo.

Diagnostic Clinic (Surgical). Dr. Arthur Dean Bevan, Chicago, Illinois.

Intermission for Review of Exhibits

Diagnostic Clinic (Medical). Dr. Russell L. Haden, Cleveland, Ohio.

Diagnostic Clinic: "Differentiation of Benign and Malignant Tumors of the Breast." Dr. Burton J. Lee, New York, N. Y.

Noon Intermission

1:00 P. M.

THE RESPIRATORY SYSTEM

Address: "Roentgenological Diagnosis of Early Tuberculosis." Dr. B. R. Kirklin, Rochester, Minn.

Address: "Injuries of the Lungs and Pleura." Dr. Frank K. Boland, Atlanta, Ga.

Address: "Diagnosis and Treatment of Mediastinal Tumors." Dr. Stuart W. Harrington, Rochester, Minn.

Address: "Bronchial Obstruction, Partial or Complete, as shown by the Roentgen Ray Examination." Dr. Willis F. Manges, Philadelphia, Pa.

Address: "Abscess of the Lung." Dr. Carl A. Hedblom, Chicago, Illinois.

Address: "Recent Advances in Diagnosis and Treatment of Pneumonia." Dr. Russell L. Cecil, New York, N. Y.

Address: "Surgical Treatment of Pulmonary Tuberculosis." Dr. Alton Ochsner, New Orleans, La.

Intermission for Review of Exhibits

FRACTURES

Address: "The Treatment of Fractures." Dr. Melvin S. Henderson, Rochester, Minn.

Address: "Operative Arrestment of Longitudinal Growth of Bones; Indications for and Results of." Dr. Dallas B. Phemister, Chicago, Illinois.

Address: "The Treatment of Ununited Fractures." Dr. Edwin W. Ryerson, Chicago, Ill.

Address: "Purpura and Pathological Hemorrhage." Dr. Russell L. Haden, Cleveland, Ohio.

Dinner Intermission

7:00 P. M.

THE BREAST

Address: "The Choice and Technic of Surgical Methods in the Treatment of Carcinoma of the Breast." Dr. Arthur Dean Bevan, Chicago, Illinois.

Address: "Paget's Disease of the Breast." Dr. Edmond M. Eberts, Montreal, Canada.

Address: "Therapeutic Problems of Syphilis." Dr. Paul A. O'Leary, Rochester, Minn.

Address: "Significance of Hyper- and Hypo-Metabolism." Dr. James H. Means, Boston, Mass.

Address: "Bright's Disease." Dr. Hilding Berglund, Minneapolis, Minn.

Address: "Some Aspects of Asthma." Dr. Robert D. Rudolph, Toronto, Canada.

Friday, October 23, 8 A. M.

Diagnostic Clinic (Surgical). Dr. E. Starr Judd, Rochester, Minn.

Diagnostic Clinic (Medical). Dr. John H. Musser, New Orleans, La.

Diagnostic Clinic (Surgical). Dr. John B. Deaver, Philadelphia, Pa.

Diagnostic Clinic (Medical). Dr. Cyrus C. Sturgis, Ann Arbor, Michigan.

Intermission for Review of Exhibits

Diagnostic Clinic (Surgical). Dr. George W. Crile, Cleveland, Ohio.

Diagnostic Clinic (Medical). Dr. Elliott P. Joslin, Boston, Mass.

Address: "The Importance of Preserving or Restoring Function in Performing Radical Operations on the Large Intestine and Rectum." Dr. William J. Mayo, Rochester, Minn., and Dr. C. F. Dixon, Rochester, Minn.

Noon Intermission

1:00 P. M.

THE GALL-BLADDER AND LIVER

Address: "Different Forms of Jaundice and their Significance." Dr. James E. Paullin, Atlanta, Ga.

Address: "Malignant Lesions of the Gall-Bladder." Dr. E. Starr Judd, Rochester, Minn.

Address: "Differentiation of Biliary and Renal Calculi." Dr. William D. Haggard, Nashville, Tenn.

Address: "The Medical Treatment of Gall-Stones and Cholecystitis." Dr. John H. Musser, New Orleans, La.

Address: "Surgical Aspects of Obstructive Jaundice." Dr. Waltman Walters, Rochester, Minn.

Address: "Acute Yellow Atrophy of the Liver—Incidence, Pathogenesis, End-Stages." Dr. M. A. Glankenhorn, Cleveland, Ohio.

Address: "The Functionless Gall-Bladder." Dr. John B. Deaver, Philadelphia, Pa.

Intermission for Review of Exhibits

Address: "Present Aspects of Treatment of Pernicious Anemia." Dr. Cyrus C. Sturgis, Ann Arbor, Michigan.

Address: "Indications for and Clinical Results in Denervation of the Adrenal Gland." Dr. George W. Crile, Cleveland, Ohio, and Dr. E. P. McCullagh, Cleveland, Ohio.

Address: "Complications and Sequelae of Diabetes." Dr. Elliott P. Joslin, Boston, Mass.

For detailed information write Dr. Edwin Henes, Jr., 759 N. Milwaukee St., Milwaukee, Wisconsin.

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MULTIPLE MYELOMA AND DIABETES
INSIPIDUS

Mark J. Bach, Milwaukee, and William S. Middleton, Madison, Wis. (*Journal A. M. A.*, Aug. 1, 1931) report an instance of the coincidence of gross pathologic changes in the bones and diabetes insipidus. Of particular significance were the possible changes in bony structures about the sella. Whatever the interrelationship between the bony lesions and the disturbance in water metabolism, a further example is added in the case of multiple myeloma with associated diabetes insipidus.

Original Articles

THE ROLE OF PROPHYLAXIS IN OBSTETRICS*

FRANK F. MAPLE, M. D.
CHICAGO

Our obstetrical death rate is today 0.68%. Of this 0.43% is puerperal and preventable. In this country one out of every 150 mothers dies of the complications of pregnancy or the accidents of labor. Twenty thousand women die in the United States every year of puerperal infection and obstetrical accidents. Three women bleed to death every day in the United States as a complication of labor. For every patient who succumbs it is not too much to claim that she was seriously ill; or, in other words, that the annual puerperal morbidity in this country will run 250,000.

Eclampsia together with the other toxemias of pregnancy accounts for 26% of the childbirth mortality. Of these, the present causes of mortality and morbidity, are sepsis, toxemia and hemorrhage; and $\frac{3}{4}$ of all three can be prevented by proper application of our already acquired knowledge.

We have then to consider puerperal infections, the obstetrical accidents and the toxemias of pregnancy from the standpoint of prophylaxis. Our interest must begin when we are first called to the case—complete general examination and obstetrical diagnosis to be made at this time. This must include blood and urine with a re-checking at each succeeding visit, which should be made as often as the individual case requires. We must know her family history, her own past history, especially as to her contagious diseases and previous infections, her marital history, and the venereal history of her husband. From an obstetrical standpoint, the following questions are to be answered:

1. Has she a normal pelvis?
2. Has she heart disease?
3. Has she kidney disease?
4. Has she infective foci of disease?
5. Has she syphilis?

The type of pelvis will usually indicate the

type of delivery, and may be the underlying factor in an abnormal presentation. External pelvimetry is of considerable service—43.6% of such cases with small measurements require operative interference. Internal pelvimetry by the Skutch method is used. These measures are of distinct service in estimating the margin of safety in the size of proportions in carrying out a trial labor. X-ray pelvimetry is useful and should prove more so as we arrive at a standard technique—it gives a fair idea as to the relation of the fetal head to the pelvis. The head, however, is the best pelvimeter.

We must know her heart condition. Is it normal, or is there myocardial or valvular disease? Our best guide is the heart tolerance of muscular activity rather than our stethoscopic findings. Practically all compensated hearts will go through the labor. Restored compensation with strict care will carry the work of normal labor. Seldom does the heart call for an interruption of pregnancy. Such interruptions are practiced less each year than in preceding years.

Are her kidneys capable of doing the work of two individuals? The kidneys are so often the underlying factor in the toxemias and eclampsias. Many of our surprise eclampsias occur in our healthy specimens, from whom we expect normal deliveries. The routine examination in the pre-natal clinic should include the complete examination of the blood, examination of the ocular background, and estimation of the daily output of chlorides. This can be supplemented by testing the functional flexibilities of the kidneys. More than $\frac{1}{2}$ of the deaths from eclampsia are attributed to non-detection of excessive albuminuria.

Infective foci discovered during early pregnancy should be cleared up. Such infection later in pregnancy would best not be stirred up lest we cause a condition worse than that already existing. Routine Wassermann examination gives us unreliable information in pregnant women. A positive Wassermann without clinical evidence does not indicate active auto-syphilis treatment, especially by the arsenicals. Mercury and potassium iodide are justifiable in such cases.

Forty-three per cent. of our childbirth death rate is laid to puerperal infection—a preventable

*Read before the Section on Surgery, Eighty-first annual meeting, Illinois State Medical Society, East St. Louis, May 6, 1931.

disease, caused usually by infections from without, though infections from the patient's own body are by no means excluded. Prevention of such infection is best arrived at by following these rules of hygiene of pregnancy.

1. Clear up local infection.
2. Improve resistance. Add good nursing, liquid diet, sponging, and sedatives.
3. Conduct labor by simple aseptic technique. Rectal examinations always. The only indications for vaginal examination being the prolapse of the cord, hemorrhage, or stopped labor.
4. Vaginal examination only after regular surgical preparation, as good as you would use for a laparotomy.
5. Limit obstetrical wounds, and prevent their infection. Trauma is the most important cause of fatal sepsis.
6. Do not hurry normal labor.
7. Conserve the bag of waters.
8. No bearing down until dilated.
9. No ergot until placenta is out.
10. Do not force crede.
11. Repair all tears and episiotomy wounds.
12. Limit forceps to strict indications.

A woman will usually recover from her labor unless molested by meddling accoucheurs. Her natural immunity will protect her from the mild auto-infections which she may incur. The physician should carefully avoid those conditions which render the natural flora of the vagina virulent and invasive and allow their transplanting to new areas of the birth canal, which are the seat of tears and of tissue destruction. He will avoid excessive bruising of the parts, and over prolongation of labor. He will preserve the bag of waters as long as possible. The retention of pieces of placenta in the uterus with shreds of membrane hanging down into the vagina may form a bridge by which bacteria may mount into the uterus. Hetero or exogenous infection is so often blamed when a case develops fever. Infected material introduced into the birth canal during late pregnancy or labor or before the completion of the third stage is the usual real factor in puerperal infection.

There are four agents which infect the case, the most common being the physician or midwife—75%—which means that we, ourselves, are

to blame for $\frac{3}{4}$ of puerperal infection by failures of technique. The next in order of incidence is the patient herself, by self-examination or manipulation of the parts. The nurse accounts for only a small percentage, and the good hospital with well regulated maternity as a factor is negligible. The patient must be instructed in body hygiene and local cleanliness. Coitus must be forbidden in the later months.

Three principles—they are old and they are good—should be followed in the prevention of puerperal infection:

1. Preserve the general immunities.
2. Preserve the local immunities.
3. Maintain the strictest possible aseptic technique.

The nervous force must be preserved, excessive bleeding during labor must be prevented—blood is valuable. There is a physiological loss in every labor—any increase becomes pathological and loss of blood invites exhaustion, increases acidosis, reduces resistance, and allows old infections to light up. Anemic patients are liable to thrombosis and embolism. Limit as far as possible the puerperal wounds. An old surgical principle—"Do not traumatize"—applies in obstetrics. The necessary obstetrical wounds must be protected. Internal examinations made only when indicated must have the same precautions as when opening the abdomen. A labor must be conducted by rectal and external examination, unless the aforementioned indications call for a vaginal examination, then do not hesitate to make it. If the tract is believed to be infected, mercurochrome in a 5% alcoholic solution or hexylresorcinol solution—20%—may have some value in killing surface bacteria.

Conduct the third stage on a physiological basis, interfering only when indicated, and such interference must be dictated by the existing conditions. Make manual removal of the placenta only if there is excessive uterine bleeding or pathological adhesions, remembering the 10% mortality rate which such manipulation carries. After operative deliveries an examination of the tract is advisable. Repair all lacerations carefully. Examine the placenta and membranes—very important information in case of a later puerperal infection. Following the completion of the third stage, the parturient canal is left

entirely alone, no internal examination, no douching, only external vulvar sepsis.

The choice of anesthesia for operative work is important. Infiltration anesthesia with novocaine for Cesarean section is always safe. Ethylene gas anesthesia has few contra-indications, always remembering that general anesthetics add to the body toxins, and any of the pregnancy toxemias are better handled without general anesthetics. Most of the so-called ether pneumonias are really exposure pneumonias.

Injuries to mother and child should be prevented. Mothers can be (and are) injured beyond repair, and the child harmed so seriously that its future is hampered. Avoid haste and the frenzy of operating when seized by the obsession to pull on anything available to deliver the child. Deliver slowly, using art rather than strength.

The toxemias which include eclampsia account for 25% of our maternal mortality. F. H. Falls says eclampsia is a disease of neglect and can be wiped out by intelligent pre-natal care. This view does not coincide with that held by Davis, Edgar, and Williams. Prenatal care is reducing this eclampsia rate every year. We must heed the findings, disturbances of special senses, especially of vision, muscular twitchings, headaches, nausea, vomiting, epigastric pain, edema of the feet and eyelids, pasty color, fetid breath, high arterial tension, exaggerated reflexes, diminished urine with casts and low urea output.

Rational prophylaxis requires a known cause for the disease. This we do not always have, but much can be accomplished by prevention. Every pregnancy is a suspect. Family history is helpful, paying particular attention to insanity, alcoholism, eclampsia in the mother, and instability in the nervous system which may lead to disturbances of the metabolism. If the symptoms of toxemia appear a strict diet is indicated with enough nitrogenous material to sustain life, in the form most easily assimilated, and that will give the least amount of waste material for the kidneys. The patient should be put to bed in complete rest, bowels kept active by saline cathartics, liquids freely, with fresh air in plenty.

If we are to lower our maternal mortality in this country, we have to deal with three most important causes of such mortality and mor-

bidity, which as before mentioned are sepsis, toxemia, and hemorrhage. We acknowledge our inability to successfully treat any one of the three, but we believe we can prevent almost all of them. If so, the predominant factor in dealing with our high maternal mortality which has been the subject of lay discussion of recent years, lies in our increasing attention to prophylaxis in obstetrics.

826 East 61st Street.

DISCUSSION

Dr. F. N. Wells, Pittsfield: I would commend this excellent paper, and especially the calling our attention to the "rules of obstetrics," which surely cannot be emphasized too much, but there are some things it seems to me the essayist has left entirely aside. I think some of the statistics so widely circulated in this country, and with an evident purpose of showing the great need of Sheppard-Towner and similar laws are largely erroneous because they include the work of incompetent midwives, and also the cases that are unattended. It would be interesting to know what the essayist's mortality has been. I do not presume it has been high. When I talk with veterans of many years in obstetric work, as I have talked with several during this meeting, and when, pardon me, I consider my own record, I am satisfied that most general practitioners are doing obstetrics well, as it comes to them to do, and that the mortality rate in the country, in the towns and small cities is not high. This may be due to the fact of the mother's acquired immunity to her surroundings—in her own home, where so many of our cases occur, and which immunity does not protect her if she is taken to a hospital, nor is it evident in the homes in the larger cities.

Dr. Jesse T. McDavid, Decatur: I had a very interesting case this summer. The patient, a week after delivery, had a profuse hemorrhage. On examination I found a fibroid tumor of the uterus. Following this she became violently insane. The insanity persisted in spite of everything we did for her, medically. Five weeks after the child-birth we did a hysterectomy and the insanity cleared up. I think conditions like this may have something to do with the mortality of obstetrics.

Dr. Charles B. Reed, Chicago: The paper is a very beautiful resumé of the work that we are doing in educational obstetrics and the Doctor has covered the field very satisfactorily.

One of the gentlemen called attention to the fact that a great many patients came to him and to many other practitioners only in the act of labor or in the last stages of same. That is only too often the case. It not infrequently happens that these cases have disasters follow that are not reported. We have in Chicago a large series of statistics without deaths. We know in many cases those deaths took place in other institutions to which the patients were quickly transferred.

We know in other instances these deaths could be prevented by prenatal care, the prenatal care which Dr. Maple has so carefully outlined. It seems to me we cannot too frequently and too religiously observe the rules which Dr. Maple has laid down and we should follow them out with as much care and attention as our own facilities will permit.

Dr. J. J. Gill, Chicago: This paper certainly covers the prophylactic handling very carefully and very thoroughly. There are, however, some things in obstetrics which must be considered and which must account for our mortality list and yet are not preventable. I refer more particularly to the monstrosities and abnormal children, of which unfortunately I have had a large number with which to deal. A few cases recited perhaps may illustrate this point.

Just the other day I delivered a woman of a hydrocephalic baby with spina bifida and clubfeet. I had delivered for her just a year ago a baby with anencephalus and spina bifida. In another case, I delivered two babies, both anencephalic. Recently, I delivered a baby that had generalized edema. Just why this generalized edema developed I do not know. The diagnosis was made by palpation and x-ray before delivery. Recently, I delivered a baby with absence of one hand. Some years ago I delivered a baby with the right arm off at the elbow and the right leg off at the knee. I do not know how to account for these things and no one else seems to know, but they must be considered in the mortality list of infants. I hope at some time there will be some way of learning about their etiology and preventing their formation.

Wassermann blood tests were negative in all these cases.

Dr. Edith Lowry, St. Charles: I would like to ask the last speaker if he had taken Wassermann tests on these mothers.

Dr. Gill: In the large number of monstrosities I have and none of them have shown any syphilis.

Dr. Frank F. Maple, Chicago (closing): We use pituitrin routinely after the baby is born, one ampule as soon as the head is delivered, which can be repeated in the present of hemorrhage and which is indicated if the hemorrhage be due to uterine atony. Pituitrin is sometimes indicated in multiparous women in the presence of atony when there is nothing in the way of spontaneous delivery with the head low and cervix dilated.

This is the obstetrical mortality and morbidity which we have in America and we cannot debate these facts. We talk to each other about long series of cases without maternal deaths. I remember Dr. Gill reading a paper some years ago covering 500 consecutive obstetrical cases, delivered in the home. In that 500 there were many monstrosities, and there was a considerable child mortality. I believe he reported no maternal mortality. Dr. Gill has done a lot of obstetrics and good obstetrics.

We must do the best obstetrics we know and will then have some bad luck. We now have this mortality. If this is to be lowered, it is our problem, and

there is no use trying to pass it on. The midwife problem is always with us. There is no use discussing this problem before a group of doctors. We must take this up with our legislators. We must improve our midwives, but let us not neglect ourselves.

LOWERING THE MORTALITY AFTER OPERATIONS ON THE BILIARY TRACT*

EVARTS A. GRAHAM, M. D.

From the Department of Surgery, Washington University
School of Medicine, and Barnes Hospital, St. Louis

ST. LOUIS, MO.

To reduce the operative mortality as closely as possible to zero must always be the ambition of surgeons. During the last quarter century the operative mortality for most operations has been greatly decreased, but there are still many problems which must be solved before we can assure patients that there is little or no danger connected with even some of the more common surgical procedures. In the case of the biliary tract the operative mortality of 16 per cent for cholecystectomy, recorded in 1890 by Courvoisier,¹ has been greatly reduced until now it is within respectable limits in most clinics. The general reduction of postoperative mortality and the reduction of mortality after operations on the biliary tract have both been accomplished because surgeons have become more "physiologically minded." One might cite, for example, the fact that the elimination of surgical shock as a source of danger after ordinary operations has been due to knowledge laboriously acquired by the physiologists and the "physiologically minded" surgeons. This knowledge has concerned itself with such fundamental questions as blood pressure, blood volume, blood transfusion, anesthetics, etc. Again one might mention the remarkable effect on general operative mortality which has been caused by the large mass of fundamental knowledge acquired concerning the kidneys and particularly concerning methods of studying their functions. When Richard Bright, nearly a century ago, found that the urine from a patient coagulated when boiled in a teaspoon over a spirit lamp he unwittingly made a great contribution to our methods of lowering opera-

*Oration in Surgery at Annual Meeting, Illinois State Medical Society, at East St. Louis, May 6, 1931.

1. Courvoisier, L. G.: *Casuistisch-Statistische Beiträge zur Pathologie und Chirurgie der Gallenwege*, 1890, Leipzig, Vogel.

tive mortality. Everyone knows now that a patient with badly damaged kidneys is a very bad risk for any sort of operative procedure. The elaborate methods for estimating how the kidneys are carrying on their work, which have been developed from the crude method employed by Bright, seemed to many clinicians during the period of their development to be too cumbersome for practical use. Familiarity with the methods, however, has made the cumbersomeness less apparent and today no surgeon can expect to have a respectable operative mortality unless he employs some of these elaborate methods of gauging the functions of the kidneys in a suspected case of renal damage.

In the case of operations on the biliary tract we are concerned not only with all of those factors which ordinarily play a rôle in surgical mortality but we have to take into special consideration the question of the liver. In every case of infection of the biliary tract there is apparently more or less involvement of the liver by the infection. In 1918 work was published by the present author² which showed that even in an ordinary case of subacute cholecystitis there is an interlobular inflammation of the liver which is more or less diffuse but is more pronounced in the right lobe than elsewhere. This inflammation seems to be a pericholangitis and it extends into the lobule even around the finest bile capillaries in the more extreme cases. This process seems to be essentially an infection of the lymphatics around the bile channels.³ The fact that this type of hepatitis is frequently found in association with cholecystitis and other inflammations of the biliary tract has been shown also more recently by others, notably by Heyd,⁴ by Moynihan⁵ and by Flint.⁶ In those cases in which jaundice is associated with cholecystitis but without demonstrable obstruction of the common bile duct it seems probable that the jaun-

dice is due to an obstruction of the intrahepatic bile ducts caused by the type of inflammation which has just been mentioned. The fact that an actual hepatitis can be demonstrated to occur simultaneously with a cholecystitis indicates strongly that the possibility of the presence of a damaged liver must always be taken into consideration when dealing with a case of cholecystitis.

The importance of the necessity of considering the liver, particularly in cases of disease of the biliary tract, lies in the fact that it is a vital organ in the sense that life cannot go on without it. One might perhaps even say that the liver is more necessary to our existence than the kidneys because it is well known that life can go on for about a week without both kidneys but that it can go on for scarcely more than twenty-four hours without the liver. For that reason, therefore, whenever the liver is badly damaged its functions may be sufficiently jeopardized to make life uncertain if any severe additional strain is put upon it which might reduce its activity still further. It would, therefore, be of inestimable value to us as practical surgeons if we had at our disposal an array of methods for gauging the condition of the liver similar to the exact and satisfactory methods which we now have for gauging the condition of the kidneys.

For the most part the only methods that we have at present for examining hepatic function of the liver have been different means of crudely estimating the excretory function of the organ by means of various dyes. These methods were introduced and have been used very largely in the hope that they might be of aid in the diagnosis of particular lesions of the liver. But it is well known that in general, disappointment has followed their use for this purpose. We have, however, somewhat accidentally come to the conclusion that estimations of the excretory power of the liver are of great importance in determining the operative risk. For this purpose we now use phenoltetraiodophthalein (isoiodeikon) which has the ability not only of making the gall-bladder visible to the x-ray but also imparts a purple stain to the serum after the latter has been slightly alkalinized. Tetraiodophenolphthalein is not satisfactory to use as a means of studying the excretory function of the liver because it does not stain the serum. When the phenol-

2. Graham, E. A., *Hepatitis: A Constant Accompaniment of Cholecystitis*, Surg., Gynec. and Obst., 1918, 26, 521.

3. Graham, E. A., and Peterman, M. G.: *Further Observations on the Lymphatic Origin of Cholecystitis, Cholelithiasis and the Associated Pancreatitis*, Arch. Surg., 1922, 4, 23.

4. Heyd, C. G., Killian, J. A., and MacNeal, W. J.: *The Liver and Its Relation to Chronic Abdominal Infection*, Beaumont Lectures, 1924, C. V. Mosby Co., St. Louis.

5. Moynihan, B.: *The Gall Bladder and Its Infections*, Brit. Med. Jour., 1928, 1, 1.

6. Flint, E. R., *Association between Gall-Bladder Lesions and Hepatitis in Human Subject*, Brit. M. J., 1930, i, p. 1041. Also, Editorial, *Hepatitis in Biliary Disease*, Brit. M. J. 1930, 11, p. 26.

tetraiodophthalein is injected intravenously in an amount sufficient to produce a cholecystographic shadow (a dose of about 2.5 grams to the average adult) a load is put upon the liver which is considerably greater than is the case with the ordinary doses of such substances as phenoltetrachlorophthalein, bromsulphalein, etc., substances which have been ordinarily used for the determination of the excretory power of the liver. For example, this dose of phenoltetraiodophthalein is about eight times that which has ordinarily been employed for phenoltetrachlorophthalein. This larger dose is probably advantageous because if we wish to measure the ability of an object to do work it is necessary to give that object enough work to perform to make the test adequate. No particular virtue for phenoltetraiodophthalein is claimed as a method of studying the excretory power of the liver. Probably the same information could be obtained with bromsulphalein or phenoltetrachlorophthalein if these were given in larger amounts.*

After we had begun to use phenoltetraiodophthalein as a routine agent for cholecystography we happened to have four unexpected deaths after operations for simple cholecystectomy. These deaths occurred in patients who apparently were good risks for operation. At autopsy in none of these patients could an adequate cause for death be found except a badly damaged liver. In reviewing all of the particulars of these cases we found that in all of the fatal cases there had been a high retention of the dye. Whereas in the normal individual there is a retention of from ten to fifteen per cent of the dye within a half hour, of these four cases just mentioned two had retentions of ninety per cent. in the half hour, one of seventy per cent and the fourth of sixty per cent. These findings alone seemed to be significant, especially when we found that those patients who did not have much retention of the dye, in other words who had good excretory functions, went through their operations in a satisfactory manner. Fortunately also it was

possible to obtain additional information of value concerning the study of the liver in these fatal cases because at operation small segments of liver had been removed for microscopic examination. For many years it has been my custom frequently at operation on the biliary tract to remove a small segment of liver for purposes of microscopic examination. Since we had in these four fatal cases such segments of liver which were placed in fixative solution while still living it was reasonable to conclude that the changes observed were not due to autolysis or to postmortem decomposition but were representative of the actual state of affairs in the liver at the time. The changes which were noticed in the livers in these four cases were chiefly those of extreme cloudy swelling together with some edema. In addition there were evidences of periportal inflammation which have been mentioned above as being characteristic changes in association with cholecystitis. In other words there seemed to be a very definite correlation between the high retention of the dye in each case and the presence of marked histological changes in the liver.

In view of the striking relationship alluded to above, which we found to exist between a high retention of dye and the danger of death from operation on the biliary tract, we decided that in the future we would not operate upon patients who showed a high retention of the dye. We decided that on the contrary we would postpone such operations until we could have more assurance that there would be less risk in operating upon them. Accordingly patients who showed a retention of dye of more than fifty per cent in the half hour were placed upon a strict course of preparation for the operation. They were put to bed and systematically given large doses of carbohydrate in order to insure a storage in the liver of a large amount of glycogen. It is well known that it is very necessary for the liver to be abundantly supplied with glycogen in order to carry on its normal functions.⁷ If the patients were unable to tolerate much carbohydrate by mouth it was administered in the form of glucose intravenously. An effort was

*Much of the work in elaborating the details of estimation of the hepatic excretory rate by means of phenoltetraiodophthalein (isoiodeikon) has been done by Dr. Warren Cole. The technique is given in detail in our book, "Diseases of the Gall Bladder and Bile Ducts," Lea & Febiger, Philadelphia, 1928, and also in "Surgical Diagnosis," edited by E. A. Graham, vol. 3, pp. 515-524, W. B. Saunders Co., Philadelphia, 1930. Colorimeters and circulars of instruction are supplied by the Mallinckrodt Chemical Works of St. Louis.

7. Graham, E. A.: The Resistance of Pups to Late Chloroform Poisoning in Its Relation to Liver Glycogen, *Jour. Exper. Med.*, 1915, 21, 185.

See also Rosenfeld, G.: *Fettbildung*, *Ergebn. d. Physiol.*, 1903, 2, pt. 1, 50.

made to provide the adult of ordinary size with approximately one hundred grams of glucose in the twenty-four hours. In addition, in accordance with an idea suggested first by Lamson, Minot and Robbins⁸ small amounts of calcium were administered. This was done not because of any bearing on the question of the coagulability of the blood but because Lamson found experimentally that the repair of livers which had been damaged by carbon tetrachloride was greatly hastened by the use of small amounts of calcium.

A striking reduction in our operative mortality in cases of disease of the biliary tract has been observed since instituting this regime. We found that patients who showed a high retention of the dye after a course of preparation such as has been mentioned would almost invariably show a marked improvement in the hepatic excretory function after two or three weeks. For example, it was not unusual to observe that after a period of this length a patient who originally had a retention of as high as ninety per cent in the half hour might improve to such an extent that the retention would be only thirty or forty per cent in the half hour. Such patients could then be operated upon safely. This point is well shown in our operative mortality. For example, in the three year period before the recognition of the importance of estimating the excretory function of the liver our average mortality in cases of simple cholecystectomy was six per cent. in 216 cases. In the last three years in 224 cases of simple cholecystectomy our mortality has dropped to 0.4 per cent. A striking reduction has also occurred in the mortality following the operations on the common duct, namely, a drop from 7.7 per cent. to 2 per cent. The striking change in the results after simple cholecystectomy is shown in the following table:

Hospital Mortality After Cholecystectomy

For Three Years Preceding Use of
Phenoltetraiodophthalein

Year	Cases	Deaths	Percentage
1925	78	4	5.1
1926	63	7	10.1
1927	75	3	4.0
Total	216	14	6.0

8. Lamson, P. D., Minot, A. S., and Robbins, B. H.: Prevention and Treatment of Carbon Tetrachloride Intoxication, J. A. M. A., 1928 (Feb. 4), 90, p. 345.

For Three Years in Which Test Has Been Used

Year	Cases	Deaths	Percentage
1928	90	0	0
1929	68	0	0
1930	66	1	1.5
Total	224	1	0.4

In general the same type of patients were operated on in the last three year period as in the first three year period. The operations also were not performed by one individual but by various members of the Department of Surgery. No patient was declined an operation on the biliary tract except one individual who, in addition to advanced years, had a bad myocarditis with decompensation, angina pectoris and marked arteriosclerosis. In the other patients, who seemed at first to be bad risks, the operation was merely postponed in accordance with the suggestions which have been made above. Many of the patients in the last three years as well as during the first three years were old. We feel, therefore, that an intelligent use of the dye test for determining the excretory function of the liver may be of very great significance in providing us with one more means of estimating the operative risk.

This study has confined itself merely to operations on the biliary tract but doubtless the same ideas would hold for any kind of operations. A patient with a very badly damaged liver would almost certainly be a bad risk for even a trivial operation. The present methods of estimating the state of the liver are of about the same degree of crudeness as Richard Bright's test of the function of the kidneys by boiling the urine over a spirit lamp. When the methods of examining the liver have been developed to the same high point of refinement and accuracy that has been reached in the case of the methods of studying renal function we may confidently expect to have added to our surgical armamentarium another means of greatly reducing the mortality after all operations.

Of course, all of the deaths after operations on the biliary tract are not due to disturbed functions of the liver. Some are definitely due to conditions above the diaphragm, notably to myocarditis and to pulmonary complications. Simultaneously with our attempt to reduce the mortality due to disturbances of hepatic function we have also been interested in the ques-

tion of attempting to reduce the mortality from pulmonary complications. Soon after Henderson, Haggard and Coburn⁸ published their important work which showed that ether and other inhalation anesthetics could be rapidly removed from the body by inhalation of carbon dioxide we proceeded to apply this suggestion to all of our abdominal cases after operation. At first this was done without any reference to the question of preventing pneumonia but later, after the stimulating publication of Coryllos and Birnbaum,⁹ it seemed that possibly it might have been of benefit for that purpose at our hands also. These latter authors have produced a considerable amount of evidence which indicated not only that postoperative pulmonary atelectasis is due usually to an obstruction of the main bronchus by mucus but they also brought evidence to indicate that ordinary pneumonias, both of the lobar and bronchial type, perhaps often begin as a pulmonary atelectasis.¹⁰ The effect of carbon dioxide on the respiratory center results, of course, in a forced inspiration. The administration of carbon dioxide to a patient, therefore, might on theoretical grounds seem to be of value in preventing pneumonia because by making the patient breathe deeply it would prevent atelectasis. We convinced ourselves some years ago that some degree of pulmonary atelectasis is very common after cholecystectomy by resorting to the simple means of taking x-ray films of ten consecutive patients on the day following the operation. In each case we found an abnormal elevation of the right side of the diaphragm. There seemed good reason, therefore, for making a routine practice of administering carbon dioxide to all patients after operations on the biliary tract.

For the past three years we have put all patients who have had abdominal operations on a routine procedure as follows: While still on the operating table, as soon as the peritoneum has been closed, the patient is given enough carbon dioxide by the anesthetist to take four or five deep inspirations. After the skin has been

sutured the procedure is repeated. When the patient returns to bed the nurse in charge of him administers a mixture of thirty per cent. carbon dioxide and seventy per cent. oxygen for about one minute at intervals of every fifteen minutes until he is fully conscious. After this period he is closely watched to see if he is taking only very shallow respirations. If so the nurse again administers carbon dioxide at about hourly intervals. This practice is maintained for the first twenty-four hours after operation. The procedure makes it certain that the patient at frequent intervals will take two or three deep inspirations. As a matter of fact, because of the physiological action of the CO₂ on the respiratory center, he cannot avoid the deep inspirations. We feel that it is important to carry out the administration of carbon dioxide even when the patient has not been operated on under ether anesthesia because the nature of the anesthesia has very little to do with the incidence of atelectasis. We think that we have noted a very marked decline in the number of cases of pneumonia which have followed our operations on the biliary tract. It is hardly necessary to state, however, that this procedure will not prevent all cases of postoperative pneumonia. It will prevent only those which originate in an atelectasis. On the other hand, prolonged administration of carbon dioxide is not only useless but may be actually harmful, in that it will induce fatigue of the respiratory muscles, a point which has been emphasized by Van Allen and Lindskog.¹¹

The plan of postoperative administration of carbon dioxide has for various reasons been carried out most satisfactorily upon patients other than gynecological ones. For that reason in the figures given below of the comparative incidence of pulmonary complications after abdominal operations in the era preceding and during the administration of carbon dioxide respectively the gynecological cases have been omitted. The reason for selecting only the abdominal cases for study is that it is well known that postoperative pulmonary complications occur with greater frequency after laparotomies than after any other type of operation. During the years 1923 and 1924 (before the era of administration of CO₂ to our patients), out of

8. Henderson, Y.; Haggard, H. W., and Coburn, R. C.: The Therapeutic Use of Carbon Dioxide After Anesthesia and Operation, *Jour. A. M. A.*, 1920, 74, 783.

9. Coryllos, P. N., and Birnbaum, G. L.: Obstructive Massive Atelectasis of the Lung, *Arch. Surg.*, 1928, 16, 501.

10. Coryllos, P. N., and Birnbaum, G. L.: Bronchial Obstruction: Its Relation to Atelectasis, Bronchopneumonia and Lobar Pneumonia, *Ab. J. Roentgenol.*, 1929, 22, 401.

11. Van Allen, C. M. and Lindskog, G. E.: Obstructive Pulmonary Atelectasis, *Arch. Surg.*, 1930, 21, 1195.

822 abdominal operations there were 19 cases of postoperative complications of various kinds, of which 6 followed upper abdominal operations. The total incidence, therefore, of pulmonary complications after abdominal operations exclusive of gynecological cases was 2.3 per cent. In the year 1929 (after the plan of administering CO₂ had become well established), out of 561 laparotomies there were only 3 cases of postoperative pulmonary complications, an incidence therefore of only 0.53 per cent., or one-fourth of the previous era. It is noteworthy also that during this year there was not a single pulmonary complication recognized after an operation on the upper abdomen. On the other hand, in the year 1930, out of 496 laparotomies other than gynecological cases, there were 22 cases of pulmonary complication, an incidence of 4.4 per cent. At first glance this result would seem to indicate that the administration of CO₂ not only had been of no benefit but might even have been harmful. On closer analysis, however, one finds that 19 of the 22 cases followed operations on the lower abdomen, and these were chiefly suppurative conditions such as acute appendicitis. These facts are important because nearly all the statistical studies which have been made on the incidence of postoperative pulmonary complications have shown that they occur much more often after operations on the upper abdomen than elsewhere.¹² It is possible therefore that although the total incidence in the year 1930 was much higher than the preceding year nevertheless cases following upper abdominal operations may actually have been prevented. Those which followed suppurations in the lower abdomen, acute appendicitis, etc., were more probably embolic rather than atelectatic in origin. The administration of CO₂ can hardly be expected to prevent those cases which have their origin in infected pulmonary emboli. In the last analysis, however, these figures illustrate again how difficult it is to rely on statistics in certain types of clinical research.

Nothing has been said in these remarks concerning the special treatment of jaundice or the preparation of a patient for operation who has

an obstructive lesion of the biliary tract. A discussion of these matters has been purposely omitted because the subject has been well covered by others and I have nothing particularly new to add to that field, except in so far as to indicate that much will be learned about the suitability of such patients for operation when we have more refined methods for estimating the behavior of the liver.

Two other points, however, deserve mention. One is that almost never do we operate on a patient with an acute cholecystitis. Acutely inflamed gallbladders very rarely perforate unless the inflammation occurs during an attack of typhoid fever. There is accordingly very seldom any necessity for making of such a case an emergency procedure to prevent a possible perforation. In this respect a case of acute cholecystitis is very different from one of acute appendicitis. With plenty of glucose to maintain a good storage of glycogen in the liver the patient with an acute cholecystitis may ordinarily be expected to show so marked an improvement in the course of a week or ten days that by the end of that time practically all of the evidence of the acute inflammation will have subsided except perhaps for a little residual tenderness on palpation over the gallbladder region. An operation at that time may be performed with much less risk to the patient because a good local immunity against the infection will have become established and there will consequently be less chance of the development of peritonitis following the operation.

Another point that deserves mention is that in our experience at the Barnes Hospital the mortality rate among men is about three times that among women. Other writers also have commented on the fact that apparently it is more dangerous for a man than for a woman to undergo an operation on the biliary tract. I do not know any adequate explanation of the fact.

SUMMARY

The condition of the liver is a matter of great importance in determining the operative mortality after cholecystectomy. Even in cases without jaundice and without a stone in the common duct the liver is occasionally so badly damaged and its functions are accordingly so much im-

12. See chapter by Cutler and Scott on "Postoperative Complications" in *Surgical Diagnosis*, edited by E. A. Graham, vol. 2, p. 181, W. B. Saunders Co., Philadelphia, 1930.

paired that it seems to be impossible for a patient to survive even a simple cholecystectomy.

Our present methods of estimating the condition of the liver are doubtless very crude in comparison with methods which will be available in the future.

The determination of the excretory function of the liver by means of such a substance as phenoltetraiodophthalein (isoiodeikon) seems to be of considerable help in gauging the suitability of a patient for operation.

The administration of adequate amounts of carbohydrate in order to insure a good reserve of glycogen in the liver will so improve the hepatic condition that a dangerous case will be converted into a safe one.

There is ordinarily a high incidence of pulmonary atelectasis after operations on the gall-bladder. This can be prevented to a very great extent by the postoperative administration of carbon dioxide.

By utilizing these methods of gauging the operative mortality and of improving the condition of the patient our own hospital mortality after the operation of cholecystectomy has been reduced from 6 per cent. to 0.4 per cent.

600 S. Kingshighway.

THE MEDICAL PROFESSION AND THE HEALTH DEPARTMENT*

A. J. McLAUGHLIN, M. D.

CHICAGO

1. *Achievements of Doctors in Public Health*

The role which doctors have played in the evolution and development of our present day practice of public health is one of which the profession may well be proud.

Almost without exception the men who have brought order out of chaos and who have developed the health departments to their present state of efficiency, have been doctors. Pasteur was a chemist and many research workers who discovered facts in preventive medicine were not doctors, but it was the doctor acting as Health Officer who applied this knowledge and developed the system of wholesale preventive medicine which is the main objective of health departments. But this was all individual effort and no

significant collective action in preventive medicine by organized medical societies was in evidence until the past decade. This was not the fault of the practicing physician. He had been taught curative medicine only—to care for the sick and injured and only within the past decade has preventive medicine been taught in an effective manner to undergraduate students of medicine. The evolution and development of preventive medicine in health departments since 1900 was prosecuted vigorously by health officers. Even more enthusiastically unofficial agencies by educational propaganda insisted on prevention and the development of facilities for prevention rather than cure.

The medical profession sticking to its business of curing the sick and treating the injured steadfastly refused to establish clinics for the examination of apparently healthy people or to immunize or vaccinate against disease except upon individual request. It was natural, therefore, that both official and unofficial health agencies in their enthusiasm and in the absence of such facilities, should establish clinics, and create in the public mind by education a demand for protection against contagious diseases by vaccination or immunization and for the discovery and early correction of disease and defects in the apparently healthy. Unofficial agencies were able to secure large sums of money for such preventive work—the great foundations allotted large funds for preventive work, educational and otherwise, and the official health officers secured for their departments large appropriations to prevent diphtheria, typhoid fever, tuberculosis and later venereal diseases. As a result an artificial gulf was produced between the doctor who was a health officer who practiced preventive medicine and the doctor in private practice who practiced curative medicine.

In certain diseases where treatment is necessarily a part of prevention, the doctor in private practice saw clinics develop and expand which seemed to be taking his patients away from him. This gulf should never have been created and is now disappearing. The undergraduates in Class A Medical Schools are now taught preventive medicine. Those in practice who had no such instructions are in the great majority willing to concede that preventive medicine is part of their job. They now practice preventive medicine in

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individual cases but are slow to organize and establish the facilities (clinics) necessary to do the work on a large scale.

Forty years of evolution and development in public health work has brought public health administrators to the point where at last they know what ought to be done and the best way to do it. In those forty years, and especially in the last thirty years, they have often established both fixed and traveling clinics, conducted wholesale immunization campaigns, wholesale examination for the discovery of defects in school children—all of which is work that should be done by the practicing physician—and by the medical society as a collective unit. The only excuse for invasion of the doctor's territory was that the doctor individually and collectively would not do these things that were urgently necessary if we were to accomplish anything in preventive medicine. No health officer could sit idly by while children died, incipient tuberculosis became advanced tuberculosis, and venereal disease ran rampant when aggressive action even if wrong in principle as an invasion of the private physician's field, could prevent this unnecessary loss of life.

Public health practice is not yet standardized, but three decades of experience has taught us much. It is not longer in a state of flux. Our ideas of prevention have crystallized. Health Officers now know what ought to be done and what part organized medicine should play in the drama of preventive medicine. Even with the tremendous development in public health activity, including the clinics, immunization campaigns, drives for early discovery and correction of defects, educational propaganda and prenatal clinics for mothers, and baby welfare stations; certain fundamental defects exist in our public health programs which can only be corrected by concerted effort of county medical societies or by state medicine or some system similar to state medicine.

2. *Public Health Defects Which Can Only Be Properly Corrected by the Collective Action of Organized County Medical Societies*

(a) *Maternity and Infancy:*

While the work of health departments and unofficial agencies with educational propaganda and by clinics has reduced the infant mortality very considerably, the death rate for mothers in

childbirth or soon after and of children under one month of age remains high. It is so high that it places the United States near the bottom of the list of civilized nations and really constitutes a national disgrace. No amount of money expended, as, for instance, under the Sheppard-Towner Act, can have much effect upon this high death rate. It is due to our lack of proper prenatal and obstetric care by doctors who have not had sufficient experience before graduation, who have no lying-in hospital available and the enormous number of ignorant, untrained or partially trained midwives. It is not the midwives alone who are to blame. There are too many busy general practitioners who do obstetric work, who did not have the undergraduate training and experience necessary, and who lack the advantage of expert consultant advice that could be made available in a lying-in hospital and clinic established and supervised by the county medical society.

(b) *The Pre-School Child:*

The greatest single defect in our public health work today is our inability to secure early immunization and discovery and correction of defects in children from one to five years old. In this field health officers have barely scratched the surface. We begin to get control of children only in the school age group—and here five years have been lost. Strenuous efforts have been made through baby welfare stations, parent-teacher associations and the splendid missionary work of public health nurses, but the fact remains that in the main this field is almost untilled. The only way in which early immunization and discovery and early correction of defects can be secured is by the action of the practicing physicians individually and collectively. Official action cannot reach this group.

(c) *Preventive Medicine for the Adolescent and Adult.*

Most certainly we need more general practitioners but we need general practitioners who have knowledge of the modern technique and equipment necessary for early diagnosis in the ambulant stage. It is too much to expect that they should have this equipment in their individual offices but the equipment and apparatus should be readily available, within easy reach and freely used. Too often we find plain symptoms of gastric or duodenal ulcer treated for

months by prescription for indigestion; incipient tuberculosis treated by prescription for months without diagnosis until it becomes moderately or far advanced; pathologic conditions of gall bladder or appendix without a Graham test or x-ray treated for months by prescription until some acute climax forces operation or causes sudden death; hyperthyroidism and hypothyroidism receiving perfunctory office treatment by prescription without basal metabolism tests; treatment of female genital complaints by tampons or by guess-work surgery without x-ray after the use of dyes, and many other conditions which receive office treatment without using modern diagnostic methods.

In the large cities and medical centers the diagnostic equipment is available and more likely to be used. The general practitioner of fifty or more years of age is more likely to have kept pace with the advances in diagnostic technique. In the small cities and towns and in the large rural areas where the average age of physicians is fifty-two years, it is quite another story. If a man or woman not acutely ill asks for examination or treatment the examination is perfunctory and incomplete. The campaign and propaganda for annual physical examinations of the apparently healthy fell far short of its possibilities because in cities the examination cost too much or the applicant feared an unknown cost. In the small cities and towns and rural areas it was a failure because the facilities for complete examination did not exist.

3. *Factors in the Failure of Organized Medicine to Correct These Defects*

(a) *Lack of Organization:*

We speak of the organized medical profession but its organization is little more than provision for periodic meetings for the reading and discussion of papers on scientific subjects. An exaggerated sense of ethics makes the doctor shrink from anything like business organization, yet organization on a business basis, provision of clinic facilities, regulation of fees on a sliding scale basis according to income is essential if state medicine is to be prevented. There are notable exceptions—The Kings County (Brooklyn); The New York Academy of Medicine; The Wayne County (Detroit) Medical Societies have taken steps toward business organization along lines of social service, but except these and a few

others in large cities, county medical societies are unorganized except for periodic meetings for presentation and discussion of scientific papers. The business side of their real obligation, to establish facilities for the best preventive medical and surgical advice and treatment at a price that each citizen can afford is entirely neglected.

(b) *Cost of Medical Care:*

There has been a lot of loose talk and inaccurate statement in regard to the cost of medical care. The best modern medical care is worth all that you pay for it, provided you can afford the cost. The cost has not increased out of proportion to the increased cost of other services. Medical care, especially early diagnostic procedures and treatment, has been expanded and amplified by the discovery of more precise methods of diagnosis and has become exceedingly complex. This necessarily adds to the cost over the examination of forty years ago in which the doctor used only his own senses and perhaps a stethoscope.

In the large cities the facilities for early diagnosis and the best preventive medical and surgical care are available. The trouble here is that the man of moderate means does not know what it will cost, and fearing that the cost will be excessive he avoids the doctor and the clinic, and neglects himself and his family until serious illness or injury forces him to call a doctor. In the small cities, towns and rural areas, lack of proper early preventive treatment is not due to the cost, but is due to the fact that the facilities for early diagnosis and treatment do not exist. I have seen many small cities with a small modern hospital approved by the American College of Surgeons but without an out-patient department. What does this mean? There is no provision for preventive medicine, a man must be knocked down by an automobile, have typhoid fever or pneumonia, in other words be seriously injured or acutely ill before he comes in contact with the modern equipment of such a hospital. There must be a decentralization of modern equipment from the large cities and medical centers to the small cities and towns, and also a better distribution of young doctors who know how to use this equipment.

(c) *Distribution of Doctors:*

While the problem in large cities is largely one of organization and adjustment of modern fa-

cilities which already exist, the small city, town and rural problem is the necessity for these facilities which do not now exist. Next to the need for out-patient facilities and modernly equipped clinics, the greatest need is more and better trained doctors. One-third of the towns of 1,000 population or less in 1925 had no doctors. In 1906 there were 33,000 doctors in such small towns, in 1924 there were 27,000, or a decrease of 18%. The average age of these doctors in 1925 was 52 years. When these men were graduated, preventive medicine was not taught nor was it considered a part of a practicing physicians work. Present day methods of precision in diagnostic technique and modern equipment were unknown.

It is possible that doctors in this age group in the large cities have kept pace with advances in methods and apparatus for modern practice, but in the small city, town or rural area it is extremely unlikely that doctors over 50 have kept up, and even if they have a reading knowledge of such methods and equipment, the facilities are not available.

The young medical graduate of a Class A school today is trained in preventive medicine, and is taught to use these modern instruments of precision in diagnosis. He learns to depend upon the modern facilities which are used in his college and hospital training. These are available in the city and hence he stays in the large city. He will not go to the small town because these facilities do not exist and he cannot practice medicine in the way he has been taught. Here again the remedy is obvious, there must be decentralization of modern diagnostic and treatment facilities from the large cities and medical centers to the small city.

In the distribution of young, highly trained graduates, the law of supply and demand is inoperative. Why? The reasons given above explain. The young doctor would go to the small city or town where the demand for his services is greater, and the remuneration also greater than in the keen competition of the city overcrowded with doctors, provided he could practice medicine in the modern way with modern facilities, which he considers indispensable.

4. *Remedies Suggested for Correction of These Defects.*

(a) Organization of County Medical Societies, and decentralization of Modern Methods, Technique and Equipment for Early Diagnosis and Treatment.

It is not sufficient to have all facilities for the best preventive medical and surgical diagnosis advice and treatment available in the large city or medical centers of a state. The citizens living in small cities, in towns or rural areas are, in common justice, entitled to the use of such facilities quite as much as the wealthy or the poor living in the great city or medical center. The county medical society should establish or cause to be established in the county seat and in populous counties in other small cities, out-patient clinics completely equipped for early diagnosis and treatment. They should fix the fees on a sliding scale according to income—for example dividing the clientele into three or more classes:

(1) The indigent to be paid for by the county at a fixed rate.

(2) Those earning less than \$1500 per annum to pay a minimum fee.

(3) Those earning from \$1600 to \$2400 per annum to pay a higher fee.

(4) Those earning over \$2400 per annum to pay full fees.

They should fix the fees for house or office visits for these same classes. The facilities for diagnosis or treatment of the out-patient clinic or hospital should be available for all members of the medical society, and the fees collected divided pro rata.

(b) *State Medicine:*

I use the term state medicine because it is in common use for the bogey that continually confronts the practicing doctor. State medicine means the assumption by the Government (federal, state or municipal) of the obligation to give every citizen or certain groups of citizens medical and surgical care, by doctors who receive no fees but are paid a salary by the Government. In general this would mean the State Government, but the same results to the practicing physician are possible by the encroachments of private corporations who assume this obligation for their employees, using salaried physicians to do the work.

The advocates of State medicine have claimed

that the defects noted above in our public health activity would be corrected by State medicine because medical and surgical and presumably preventive advice and treatment would be available to all citizens without cost. One must admit that theoretically under such a system treatment would be available to all, but what kind of treatment? If a crowded office in which the panel doctor gives a prescription, rushes one patient out and like a barber calls "Next" can satisfy the needs of scientific medicine, then the system might suffice. But today the average American citizen knows he is entitled to better treatment than this. He has been educated to the point where he knows something of the newer methods and equipment used in modern diagnostics and treatment.

To me state medicine appears a miserable makeshift. It is un-American, ultra-paternalistic and destructive of self respect in both doctor and patient. It is a failure in Germany, in England and in other European countries. It is from an American viewpoint a pauperizing influence, wrong in principle and doomed to failure in practice, if we are ever foolish enough to try it.

In presenting this paper I had in mind two objectives, the first concerns the practicing physician, the second public health administration. I want to see the medical profession solve its own problem in its own way without outside interference by governmental or any other agency. Proper organization of county medical societies will make state medicine impossible, enable the doctor to retain his self respect and preserve that priceless, intimate, confidential relation that should exist between doctor and patient. In regard to the second objective, more efficient public health administration, this same organization of county medical societies will also correct the defects in our public health activity cited above. It will make possible better lying-in facilities and better consultant advice for prenatal work. It will provide the machinery now lacking for early diagnosis and treatment of diseases or defects in the pre school child, and in adolescents and adults as well.

DISCUSSION

Dr. Chas. H. Miller, Chicago: The paper is depressing to me because I fully agree that the difficulties

that confront the medical profession individually or collectively are almost insurmountable. If I read the times right, we are headed for State medicine. Why do I think so? After an experience of thirty odd years, I realize the shortcomings of physicians and I appreciate the value of a centrally administered department of health. I don't know why I should take the time but I can't help it. In Chicago, knowing that it was possible to abolish diphtheria with toxin-antitoxin administration, with the Health Commissioner wholly cooperating, we proposed to immunize the children in Chicago against diphtheria. We had the facilities and the financial support of the Department of Health. We had the tentative, full cooperation of the Chicago Medical Society, and where did we get? We sent out requests for cooperation on the part of the physicians in the city and there was abundance of cooperation, absolutely all that anybody could ask. Where did we get in getting these children immunized? We got a paltry twenty-five or thirty thousand and at that we certainly fared better than a great many of the larger cities. It wouldn't work. It didn't work, and it didn't work until Dr. Kegel said, "I will have to use the health organization of the school system to get the children immunized. Many parents wouldn't bring them in. We had six hundred thousand full page advertisements donated by one of the dailies in which the benefits of immunization were proclaimed and every child in the school got one of them to take home and notwithstanding that we immunized but a paltry number, until Dr. Kegel put the health nurses and health physicians behind the scheme, with a willingness to immunize every child that would be permitted to have it done by the parents, with the result that the number immunized jumped right up.

Preventive medicine will never be carried out by the physicians. Why? They are too busy. They haven't got the time. A large number of them are not sufficiently educated along those lines. They are not sufficiently interested. But the combined reasons are adequate to prevent the successful prevention of illness.

I was very much interested in what Dr. McLaughlin had to say about the organization of the county medical societies in a group to organize clinics providing facilities for recognizing incipient diseases and all that. I have no experience in local practice, but it seems to me that it is more probable to get State medicine than it is to organize our profession in a group way that will provide the necessary equipment and cooperative effort that will yield adequate results. State medicine is going to prostitute the medical profession to the point that will put it back a hundred years so far as the attention the individual will get is concerned. When a man will change his physician, as they do in England, to one who will certify that he is unable to work long weeks after he is, and if the physician is unwilling to do so, he changes his doctor. Such organization is absolutely incompatible with all business or with any other form of logic, but as there are so many individuals and organizations interested in that phase of the problem it will require all the influence that the medical profession of the United States has to

prevent its coming, because on the other hand, as I have stated, there is so much that can be done by capable public health cooperation in the prevention of the incidence of disease which can not be well done apparently by individual effort.

Dr. McLaughlin: May I be permitted to say a word. I take it your remarks were in a measure a discussion. When you said State medicine was almost inevitable, it was the easiest way, I couldn't agree with you. I told you I wasn't as much of an optimist as I was fifteen years ago, but I am not a quitter. I will keep right on in the line I think is right and I know is right. You said it was the easiest way. So, too, if a man falls off a bridge into the water. The easiest thing is for him to drown, but, if he is a man of courage, a man of purpose, he will strike out for the shore and probably save himself.

Dr. D. D. Monroe, Edwardsville: Individualistic tendencies that are characteristic of all physicians are carried over into the State Medical Society. At this annual meeting, I see a Section on Hygiene, one on Medicine, one on Surgery, and one on Eye, Ear, Nose and Throat. Yesterday in the Section on Medicine I heard a brilliant paper on renal disease. Those in the other sections missed it. This morning Dr. McLaughlin gives us a wonderful paper on state medicine. Nobody hears it except this section, who do not need to be converted. We are doing all of our medical society work in sections and we are not getting any place because we do not get together in large groups. We are interested in surgery or in our own specialty if we have any. We ought, however, to get together in large groups once a year and forget our individualistic tendencies. We might well begin by breaking up some of our section meetings and having more general meetings. We have had a number of good papers in the General Session and I see no reason why Dr. McLaughlin's paper could not have been heard there.

Dr. McLaughlin, in closing: I want to thank the gentleman. I think that is the most sensible talk I have heard from a member in the last five years. Let's have our meetings, let's be interested in our Eye, Ear, Nose and Throat meetings, and others. Meetings are for the purpose of presentation and consideration of scientific papers. Go on with them, but, above all, let's have some general meetings for the medical profession as a whole. The problem that confronts it, confronts it as a whole and it is a problem that it alone must meet as an organization if it wants to avoid State medicine.

I don't want you to misunderstand me and I am sure Dr. Miller did. What I said was directly about what the physician ought to do to cover up some of the gaps in public health work that are now uncovered. He evidently got the impression that I wanted to minimize the work of the health department. I am a health officer. I said I was a doctor first of all; that's true; but after all I have been every kind of health officer there is, a State health officer, city health officer, and federal health officer for thirty years, and I know the necessity perhaps as well as anybody of public health departments perfectly organized-and adequately

staffed. But I don't want them to do the kind of work that can be done by the private practicing physician, and I don't think any other health officer does, but they only do it because they can't get it done in any other way. I am not substituting the greater activity and greater organization of the medical profession for health departments; not by any means. I want to go ahead and progress together but I want the medical profession to achieve its manifest destiny, solve its problems and kill forever this bogey of State medicine.

Dr. Miller: Just a minute. I fear that my remarks have made a wrong impression. I am just in the same frame of mind as you, desirous of having the medical men solve and work out their own problems and postpone if possible the evil day of State medicine, but I can't help but believe that there is a possibility that we will never do it.

Dr. McLaughlin: Well, if you can't visualize success you will never achieve it.

Dr. Miller: Because of the superior results obtained by public health organizations, I believe that it will be necessary to divide the problem between them and continue to do so just as we have been doing.

Dr. McLaughlin: I am sorry I can't agree with you.

TULAREMIA*†

A SUMMARY OF RECENT INVESTIGATIONS AND A CONSIDERATION OF THE DAYTON EXPERIENCE WITH EIGHTY-EIGHT CASES

WALTER M. SIMPSON, M. S., M. D., F. A. C. P.
DAYTON, OHIO

The past decade has brought remarkable advances in medical knowledge. Among the most striking developments has been the establishment of tularemia and undulant fever as important nosological entities. The abruptness with which these diseases have been brought to the foreground of clinical medicine, particularly in this country, leads one to a thoughtful consideration of the probability that there are many other distinct clinical entities yet to be recognized in that large group of obscure febrile diseases, variously designated by such general names as influenza, intestinal infection, la grippe, septicemia, pneumonia, et cetera.

Tularemia probably occupies a unique position in medical history because of the rapidity with which it has evolved from the obscurity of a clinical curiosity to the prominence of an important public health problem. Tularemia is likewise historically unique in that the develop-

*From the Diagnostic Laboratories of the Miami Valley Hospital, Dayton, Ohio.

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ment of our knowledge of the disease is entirely due to the labors of American investigators.

Six years ago tularemia was practically an unknown name in medical literature; reports of but fifteen cases had appeared up to that time. Since then, thanks to the diligent efforts of a few investigators, notably Edward Francis, the name has become a commonplace. Tularemia has now been recognized in every state of the Union except Maine, New Hampshire, Vermont, Connecticut and Delaware.

Descriptions of the disease have appeared in the medical literature of every civilized nation. Whereas, a short time ago, tularemia was generally believed to be of importance only in a few of the northwestern states of this country, it is now known that the disease is world-wide in its distribution. The disease independently described by Ohara in Japan is now known to be tularemia.¹ Laboratory workers have acquired the disease in England.² During 1928 and 1929, over 1,000 cases were recognized in the Union of Socialistic Soviet Republics.³ Four Russian workers paid the apparently inevitable toll for their investigations; all acquired tularemia in the laboratory; this brings the total number of laboratory infections to 24.

More recent reports by Thjøtta⁴ tell of his recognition of 50 cases of tularemia in Norway; Thjøtta has also accumulated evidence which demonstrates that the disease is by no means a new one in Norway. Reports of the recognition of the disease in other countries, in which it undoubtedly exists, are eagerly awaited by students of tularemia.

The reports of the Russian cases introduced a new animal source of infection—the water-rat or water-vole of Europe (*Arvicola amphibius*), which is hunted for its valuable fur. While wild rabbits constitute the most important reservoir of infection for other animals and man, new animal hosts and insect vectors have been discovered. These observations are of the greatest practical importance because they indicate the ever-widening spread of the infection to other forms of animal and insect life, a situation which is almost certain to be reflected in an increase in the incidence of the disease among human beings. The disease has been found to exist in nature among wild rats and meadow mice (*Microtus californicus aestuarinus*), in Cali-

fornia.^{5, 6} The writer⁷ has recently reported a case of oculoglandular tularemia in a man resulting from contact with a woodchuck (*Marmota flaviventris*; ground hog). Recent reports^{8, 9, 10} have attributed the development of tularemia in human beings to the skinning of opossums (*Didelphis virginiana*), muskrats (*Ondatra zibethica*) and the fox squirrel.

While McCoy and Chapin¹¹ were engaged in their investigations of the "plague-like disease of rodents" in California in 1911, they attempted to infect five sheep (*Ovis aries*) with subcutaneous injections of saline emulsions of spleen, liver and other tissues from guinea pigs which had died of *Bacterium tularense* infection. Three of the sheep were infected; two died. Francis¹² injected a sheep with a pure culture of *Bacterium tularense*; the animal died of the disease on the twenty-third day after the inoculation. In the spring of 1923, Parker, of the Public Health Service Laboratory at Hamilton, Montana, learned of several instances of heavy losses among sheep in eastern Montana and southern Idaho. The affected sheep were known to be heavily infested with the wood tick (*Dermacentor andersoni* Stiles). A few months after these discoveries, Parker, Spencer and Francis¹³ demonstrated that the wood tick was a common host and transmitter of tularemia. The belief of Parker and Francis that the wood ticks had infected the sheep with tularemia was supported by the recovery of *Bacterium tularense* from the spleens of guinea pigs which had been injected with ticks removed from sick sheep and by the reproduction of the disease in guinea pigs inoculated with tissues from the same sheep. In view of the fact that wood ticks which have fed on rabbits infected with tularemia are capable of harboring the organism throughout the winter and infecting other animals in the spring, it seems possible that the spread of the disease among sheep in tick-infested areas may assume considerable economic importance. Of even greater importance is the possibility of human infection from the handling of infected carcasses, or from the contamination of the hands with the tissues of crushed infected ticks or with tick excrement, while shearing or skinning sheep. Geiger and Meyer,¹⁴ in their recent report of the widespread occurrence of tularemia in Nevada, state that the source of human infection

in two cases was direct contact with the tissues or hides of sheep.

The development of typical ulceroglandular tularemia in a man who had been bitten on the hand by a coyote pup (*Canis lestes*) stimulated Parker,¹⁵ in 1926, to investigate the susceptibility of coyotes to tularemia. Three young coyotes were fed with the tissues of guinea pigs and Belgian rabbits just dead of tularemia. The coyotes died 13, 22 and 53 days, respectively, after the infectious material was first given. Typical acute tularemia infection was produced in guinea pigs injected with emulsions of tissue of the dead coyotes and the organism was recovered. The presence of the infection in the salivary glands of two of the coyotes introduced the possibility of a new avenue for the transfer of the infection to man by the bite of a wild rodent or carnivore. A more recent report (February, 1930) by Kunkel¹⁶ tells of the development of ulceroglandular tularemia in a man who contaminated a fresh cut on a finger while disposing of the carcass of an adult coyote which he had killed.

Domestic cats and kittens (*Felis catus*) inoculated by McCoy and Chapin¹⁷ and Wherry¹⁸ with tissues of infected guinea pigs and cultures of *Bacterium tularense* did not acquire the disease. These findings led these investigators to assume that the domestic cat is naturally immune to the disease. Because they were led to suspect that the domestic cat may have been a contact carrier or a naturally infected transmitter of the disease in two cases of tularemia occurring in human beings in Minnesota, Green and Wade¹⁹ fed infected guinea pig tissues to two cats. One cat died six days after eating the liver of a guinea pig dead of tularemia; the injection of the cat's tissues into guinea pigs resulted in their death from tularemia. The other cat was sacrificed on the eighteenth day; a guinea pig inoculated with the cat's splenic tissue died of tularemia. By feeding infective material or by injections of heavy suspensions of pure cultures of *Bacterium tularense* to six cats and seven kittens, Francis²⁰ succeeded in reproducing the disease in two kittens; the remaining eleven animals were entirely unaffected. From these studies it seems reasonable to conclude that the domestic cat is but mildly susceptible to the disease.

The writer²¹ inoculated on the same day two

dogs, two guinea pigs and two Belgian hares with virulent cultures of *Bacterium tularense* recently recovered from the blood of a human being who had died four days and seven hours after the onset of illness. The two guinea pigs died in four days, with the characteristic gross and microscopic manifestations of tularemia and the organism was recovered in pure culture. One of the Belgian hares died on the seventh day after inoculation; the other died on the eighth day. Postmortem examination revealed the characteristic lesions of tularemia and the organism was recovered. The two dogs remained entirely well for two months, at the end of which time they were sacrificed. Complete autopsies failed to reveal the characteristic pathologic anatomy of tularemia; serologic and bacteriologic studies were entirely negative. The dog appears to possess a natural immunity to the disease.

The horse, cow, hog, fox, pigeon, domestic chicken and turkey do not appear to be susceptible to either natural or experimental infection with *Bacterium tularense*.

For many years, trappers and hunters in many regions have observed that decimation of wild rabbits and certain game birds occurred during the same season. In 1925, Parker and Spencer²² pointed out that the common rabbit tick (*Haemaphysalis leporis-palustris*) which was known to be an important rabbit-to-rabbit transmitter of tularemia, was also found on game birds. These two workers succeeded in experimentally infecting the blue grouse of Montana with tularemia. Green and Wade²³ have found that the ruffed grouse and the Hungarian partridge possess a high degree of susceptibility to experimentally induced *Bacterium tularense* infection.

Early in 1929, Parker²⁴ described the experimental production of tularemia in quail. Later in the year, Green and Wade²⁵ reported the natural occurrence of tularemia in quail. While it appears probable that many game birds are at least potential agents of human infection with tularemia, no proved case of such origin has yet been described. The histories of two cases of tularemia in human beings suggest that contact with quail may have been a source of infection.²⁶

Deer flies (*Chrysops discalis* Williston) and wood ticks (*Dermacentor andersoni* Stiles) are important animal-to-animal and animal-to-man transmitters of the disease in the northwestern states. The development of many cases of tick-

borne tularemia in the southern states, where *Dermacentor andersoni* is not found, introduces the probability that the infecting ticks are either *Dermacentor variabilis* or *Amblyomma americanum*, common man-biting, three-host ticks of that region. A recent report by Parker, Brooks and Marsh²⁷ tells of the occurrence of *Bacterium tularense* in the wood tick, *Dermacentor occidentalis* Newmann, collected from tick-infested cattle in San Benito County, California.

This rapid succession of recent reports of new animal hosts and insect vectors brings a realization of the probable perpetuation of the disease and of the numerous avenues for human infection.

The discovery of tularemia in Indians in Nevada²⁸ and Washington²⁹ eliminates the tradition that Indians possess a natural immunity to the disease.

SUMMARY OF DAYTON EXPERIENCE

On November 25, 1927, a twenty-five year old negro was admitted to the emergency ward of the Miami Valley Hospital. His temperature on admission was 106° F. He was in delirium and was quite unable to give any account of his illness. From his wife it was learned that he had been employed at a local wholesale market, where he had skinned and dressed several hundred cottontail rabbits during the week preceding the onset of illness. His illness commenced on November 22, when he complained of a severe headache on arising. Later in the day he experienced a severe chill which was followed by a rapid rise in temperature and repeated chills and sweats; painful masses appeared in the right axilla and epitrochlear region during the same day. The suggestive occupational history and physical findings led to a presumptive clinical diagnosis of tularemia.

Ten cubic centimeters of blood were withdrawn from an arm vein. One cubic centimeter was immediately injected into each of two guinea pigs. The remainder was sent to Francis, at the Hygienic Laboratory at Washington, D. C.

The patient died on November 26, four days and seven hours after the onset of his illness. A detailed description of the autopsy findings has been published.³⁰ Because of the fact that this is the most rapidly fatal case of tularemia in man on record, an unusual opportunity was afforded to study the early gross and microscopic manifestations of the disease. The subcapsular surface of the moderately enlarged spleen (165 grams) was found to be studded with multiple grayish-white areas, usually spherical but sometimes irregular, varying in size from that of a common pinhead to that of a small pea. Similar areas were found scattered haphazardly throughout the splenic pulp. The liver was of normal size; careful scrutiny failed to reveal any whitish areas such as were found in the spleen. Three

right epitrochlear lymphnodes were of kidney-bean size. The right axillary lymphnodes were greatly enlarged, varying in size from that of a large pea to that of a plum. The nodes were soft and friable and showed many small grayish-white areas of caseous necrosis on section. There were multiple fissures and extensive desquamation of the epidermis of both hands, most marked on the right; there was no distinct ulcer. (The patient had kept his hands more or less constantly immersed in hot water at his work). The rectus abdominis muscles showed an extreme degree of Zenker's necrosis.

Microscopically, the whitish foci in the spleen and lymphnodes were seen to be areas of early caseous necrosis. Surrounding most of the miliary and submiliary necrotic areas was a narrow zone of avascular epithelioid and fibroblastic proliferation, devoid of giant cells of the Langhans' type. Many of the smaller foci of necrosis showed no peripheral granulation tissue reaction; such areas were identical with the acute necroses observed in rodents which had died acutely of tularemia. The normal architecture of the spleen and lymphnodes was largely destroyed. There was marked reticulo-endothelial hyperplasia.

Two localized areas of caseous necrosis in the parenchyma of the right lung showed essentially the same changes as were observed in the spleen and lymphnodes; this finding leads the writer to suspect that in those fatal cases in which the physical signs of bronchopneumonia have been found, the lesions are actually hematogenous focal manifestations in the lungs. It would be erroneous to consider such foci as areas of bronchopneumonia.

While the gross examination of the liver revealed no whitish areas, microscopic sections showed tiny submiliary lesions of simple necrosis, associated with reticulo-endothelial hyperplasia. The early hepatic lesions showed a striking absence of caseous necrosis. The lesions of tularemia should, therefore, be grouped with the infective granulomas.

Immediately following the autopsy, two guinea pigs were inoculated with a saline suspension of right axillary lymphnode tissue. The guinea pigs which had been inoculated with the patient's blood on the previous day died four days later. The guinea pigs which were inoculated with the axillary lymphnode tissue died the following day. All of the animals showed the "spotted spleen and liver" and the enlarged caseous lymphnodes typical of tularemia. From the heart's blood and splenic tissue of the dead guinea pigs, *Bacterium tularense* was recovered in pure culture upon our human serum modification of Francis' cystine agar.

The organisms thus recovered were then passed through four series of guinea pigs with three guinea pigs in each series and the organism was successfully recovered in each instance. After the growth was abundant on the artificial culture media the organisms were taken off in 0.2 per cent formalin and used as antigen for agglutination against known antitularense serum. In each instance the organism agglutinated promptly to the full titer of the known serum (1:1280).

Bacterium tularense was likewise recovered in pure

culture by Francis from the serum which was submitted to him on the day before the patient's death.

The hair was shaved from the abdomen of four healthy guinea pigs, and the abraded skin was rubbed gently with fragments of splenic tissue from animals recently dead of tularemia. Three of the guinea pigs died within four days, and one succumbed on the fifth day. The autopsy revealed the characteristic gross lesions, and in each instance the organism was recovered from the heart's blood or splenic tissue of the dead animal. This experiment constituted a reproduction of the ulceroglandular type of the disease.

In order to determine whether or not the organisms thus recovered would penetrate unbroken skin, fragments of splenic tissue were rubbed gently on the unshaven, unabraded intact skin of the abdomen of four guinea pigs. Two of the animals died, one on the fifth day and one on the sixth day, with the characteristic gross and microscopic lesions; the organism was recovered from both. This experiment corresponds to the glandular type of the disease as it occurs in man.

Tiny fragments of splenic tissue removed from animals recently dead of tularemia were placed in the right conjunctival sac of two healthy guinea pigs. On the following day both animals showed excessive lacrimation. On the third day a grayish-white thin film developed over the bulbar conjunctiva, with marked capillary injection and multiple minute papules of both the bulbar and the palpebral conjunctivae. Both animals died on the fifth day with caseous regional lymphnodes and the characteristic spotted spleen and liver, and from both animals the organism was successfully recovered. The oculoglandular form of the disease was thus reproduced.

Because of the fact that 24 skilled laboratorians have acquired tularemia during the course of their investigations as the result of making postmortem examinations on infected animals or as the result of handling infected wood ticks, unusual precautions were employed throughout all of the experimental work. The dead animals were immersed in 10 per cent solution of formaldehyde for five minutes before each autopsy. Sterile gowns, sterile gloves, gauze masks and glasses were worn by the prosector. All tissues were handled with sterile instruments. All of the materials used were sterilized immediately after the autopsy, and the benches on which the work had been carried out were washed off with 10 per cent solution of formaldehyde and running water. The prosector's hands were washed with soap and water, then immersed in 10 per cent solution of formaldehyde for a few minutes and then held under running water. The cages in which the animals died were immersed in boiling water. In order to limit the possibilities for the development of the infection, all of the ex-

perimental work was carried out by the writer. No person in the laboratory contracted the disease.

In view of the fact that the diagnosis of tularemia was established in the case of the young negro who died four days and seven hours after the beginning of illness, it occurred to the writer to carry out an investigation in the market at which he had worked. Eight rabbit handlers at this market were found to be acutely ill at home or in hospitals and in each instance the diagnosis of tularemia was established by positive serologic reactions. During the month of November, 1927, the writer saw twenty-four persons acutely ill with tularemia.

It has been repeatedly stated that it has been impossible to recover the *Bacterium tularense* on artificial culture mediums directly from human tissues. The writer succeeded for the first time in recovering the organism on a human serum modification of Francis' cystine agar from material taken from the involved axillary lymphnodes of two patients suffering from the acute manifestations of the disease. More recently, Shaw and Hunnicutt³¹ have also reported the direct isolation of *Bacterium tularense* from axillary abscesses. It should be stated, however, that the likelihood of recovery of the organism is much greater if the material from the primary lesion or affected lymphnodes is injected into guinea pigs; cultures are then made from the guinea pig's spleen, lymphnodes, liver and heart's blood.

The discovery of such a large number of cases in one month stimulated the writer to investigate the prevalence of the disease in Dayton prior to 1927. In conversation with several Dayton physicians the writer learned of many patients who had experienced illnesses, the nature of which was obscure at the time, but which these physicians now believed to have been tularemia. The writer visited these individuals and in practically every case elicited a characteristic history of tularemia and found serum agglutinins still present. Each of the larger markets of the city was then visited. In each of these markets at least one meat handler had had tularemia at some time during the previous 20 years. The market men of Dayton were thoroughly familiar with the disease and have known of its existence in this region for at least 30 years. They have called the disease "rabbit

fever" or "rabbit disease." Experience had taught them to dread the "rabbit season" because of the certainty with which one or more of the meat handlers would acquire a prostrating illness and often be incapacitated for months. Observations over this long period had taught them that a meat handler who once acquired the disease was free from danger of further infection. As a result of these investigations, 29 confirmed cases of tularemia which had occurred prior to 1927, were discovered.

In November, 1928, four additional Dayton cases were reported,³² bringing the total of the Dayton cases encountered during one year to 53. These investigations revealed that tularemia was a common disease in this region. Furthermore, it was conclusively demonstrated that the disease had been prevalent in Dayton for at least 20 years, during which time 7 deaths, attributable directly to tularemia, had occurred. Eleven additional cases were described in January, 1930;³³ sixteen new cases were encountered during the fall of 1930, bringing the total number of cases to 88. This represents by far the largest number of cases to be reported from such a circumscribed area.

One purpose of the present undertaking is to report for the first time the 8 cases of tularemia which were encountered in or near Dayton during the autumn of 1929. The pertinent clinical and serologic findings in these cases follow:

Case 1. Mrs. F. L., patient of Doctor J. C. Ryder, acquired an abrasion of the skin of the right index finger while dressing wild cottontail rabbits on December 7, 1929. Mrs. L. wore rubber gloves during the first part of the cleaning operation but discarded them after one of the glove fingers became torn. Two days later she experienced repeated chills with a rapid elevation of temperature to 103° F., accompanied by headache, backache, muscle and joint pains. On December 10, Mrs. L. noticed for the first time a painful mass in the right axilla; within 3 days this mass had reached the size of an orange. The right epitrochlear lymph-nodes became enlarged to the size of an acorn. Mrs. L. remained bedfast for 4 weeks with recurring chills and sweats. She lost considerable weight during this time. She was unable to resume her household duties until the first week of February, 1930. On April 1, 1930, the axillary mass showed definite evidence of fluctuation and was incised by a Cincinnati physician. Several ounces of thick yellowish purulent material escaped.

The serum of Mrs. L. submitted to me on April 30, 1930, by Doctor Ryder, who had seen the patient for the first time a few days previously, was found to

agglutinate *Bacterium tularense* in all dilutions to 1:320.

On June 1, 1930, Mrs. L. stated that she had not regained her former weight and strength.

Case 2. Mr. H. W. S., patient of Doctor Paul W. Tappan, a 40-year-old factory worker, hunted rabbits in Brown County, Ohio, on Saturday, November 23, 1929. He killed 5 rabbits during the day. He wore rubber gloves when he cleaned them but contaminated his hands with fresh rabbit tissues after he had completed the cleaning of the rabbits. Three days before the hunting trip, Mr. S. cut the skin of the right thumb overlying the dorsal surface of the metacarpophalangeal articulation. A pea-size papule appeared at the site of this cut 5 days after the hunting expedition. The next day the center of the papule became necrotic and was liberated and left a "punched-out" ulcer about 1 cm. in diameter. The next day he experienced a chill and a fever which reached 103° F. He was certain that he had acquired influenza, because of the chills, fever, headache, backache, joint pains and marked prostration. He remained in bed for 6 days. A painful walnut-size mass which developed in the right axilla was not noticed until December 2. Mr. S. lost 12 pounds in weight during the first week of his illness. The axillary mass did not suppurate and gradually diminished in size during the following month. Mr. S. was unable to continue his work until the first week in January.

Serum of Mr. S. was found to agglutinate *Bacterium tularense* in all dilutions to 1:1280. Specimens submitted to Doctor Francis at the Hygienic Laboratory at Washington, D. C., and to Leo Ey at the Ohio Department of Health Laboratories at Columbus, gave similar results.

When seen by the writer on August 7, 1930, Mr. S. had entirely recovered his previous good health.

Case 3. Mr. J. S. D., patient of Doctor O. H. Stuhlman, a 27-year-old mechanic, killed and dressed one wild cottontail rabbit on November 23, 1929. During the course of the hunt Mr. D. scratched his hands several times with briars. On November 26, he first noticed painful enlargement of the left axillary lymph-nodes. Two days later he experienced a sharp chill and a rapid elevation of temperature, associated with severe headache and general aching sensations in the back and extremities. No distinct ulcer appeared on the hand. Mr. D. continued to experience chills and fever for 3 weeks.

A blood specimen collected on the thirteenth day of illness showed no agglutination with *Bacterium tularense* antigen. A second specimen collected 26 days after the onset of illness showed agglutination in all dilutions to 1:320. Similar results were obtained by Doctor Francis.

Case 4. Mr. E. H., patient of Doctor F. C. Rounds, a 40-year-old factory worker, killed and dressed about 100 rabbits in the woods near Hillsboro, Kentucky, on December 3, 4 and 5, 1929. Mr. H. was aware of the anatomical characteristics of tularemia as they appear in the rabbit and examined all of them carefully for the presence of spotted spleens and livers. He encountered one rabbit which he is sure had the disease.

On December 9, Mr. H. experienced a severe chill and a fever of 103.4° F., accompanied by severe headache, backache and drenching sweats. On December 10, he noticed for the first time a painful lemon-size mass in the left axilla and two small papules in the skin overlying the dorsal surface of the distal phalanges of the third and fourth left fingers. Both papules had necrotic cores which were liberated within the next 2 days and left sharply defined ulcers, each about 1 cm. in diameter. Over the flexor surface of the left forearm and along the inner bicipital groove of the arm multiple sporotrichosis-like firm nodules appeared, varying in size from pea to cherry. When seen by the writer, 9 days after the onset of illness, Mr. H. had lost 20 pounds in weight. His fever persisted for 3 weeks.

Serum of Mr. H., collected 9 days after the onset of illness, showed no antitularense agglutinins. A second specimen, collected 27 days after the onset of illness, showed strongly positive agglutination of *Bacterium tulareense* in all dilutions to 1:1280.

Case 5. Mrs. A. B., a 33-year-old negress, purchased one wild cottontail rabbit at a Dayton market on November 26, 1929. She prepared this rabbit for cooking in her home. On December 2, a pea-size papule developed on the skin of the pad of the left thumb. At the same time she experienced a painful sensation in the left axilla and discovered there 2 cherry-size lymphnodes. Within a few hours of the discovery of the papule and axillary adenopathy, she developed a chill and a rapid elevation of temperature. During the next 3 weeks she experienced continuous fever varying from 100° to 103.2° F., associated with marked occipital headache, repeated chills and sweats and great prostration.

Several months previously it was discovered at the Miami Valley Hospital that Mrs. B. had a squamous cell carcinoma of the cervix uteri. She was advised to return to the hospital at stated intervals for the application of radium to the cervix. When she appeared in the hospital for this purpose on December 10, 1929, it was discovered that she was suffering from an unexplained fever. A careful physical examination revealed the presence of a papule and axillary adenopathy and careful questioning concerning contact with rabbits led to the history as outlined above.

On December 20, the axillary mass showed definite evidence of suppuration. The mass was incised and 3 ounces of thick purulent exudate escaped. On December 24, a discrete apruritic maculo-papular eruption developed in the skin of the left arm. The lesions disappeared in 3 days, leaving brownish discoloration at the site of the eruption. Four days later a similar eruption developed over the left lower extremity, which persisted for one week.

Serum of Mrs. A. B., collected on December 14, 12 days after the onset of illness, showed no antitularense agglutinins. A second specimen collected on the eighteenth day of illness was found to agglutinate *Bacterium tulareense* in all dilutions to 1:640. Similar results were obtained by Doctor Francis.

Case 6. Mrs. L. S. P., patient of Doctor J. W. Coombs, Camden, Ohio, a 43-year-old "beautician,"

hunted rabbits near Clinton, Tennessee, on November 11, 1929. While cleaning several rabbits she cut one hand with a knife and pierced the skin of the other hand with a sharp fragment of rabbit bone. On November 13, a papule appeared at the site of each of the perforations of the skin. Both hands became greatly swollen. The patient experienced repeated chills and sweats and fever varying from 100° to 103.4° F. The epitrochlear lymphnodes of both arms became greatly enlarged. Orange-size painful masses developed in both axillae. The recurring chills and sweats persisted for one month.

On February 25, the patient was seen for the first time by Doctor Coombs, who found fluctuation and suppuration of the epitrochlear and axillary lymph glands, which he incised. Suspecting tularemia, Doctor Coombs submitted a blood specimen for the agglutination reaction. This was found to agglutinate *Bacterium tulareense* in all dilutions to 1:1280 with cross-agglutination of *Brucella abortus* in dilutions of 1:80.

Cases 7 and 8. Mr. G. H., age 51, and Mrs. G. H., age 45, patients of Doctor D. M. Blizzard of Middletown, Ohio, cooperated in dressing one cottontail rabbit which was presented to them on November 16, 1929. During the dressing of the rabbit Mr. and Mrs. H. received slight puncture wounds on their right index fingers from sharp fragments of rabbit bone. On November 18, Mrs. H. suffered from general malaise, muscle and joint pains, headache and an elevation of temperature to 100° F. Her right index finger became red and swollen and at the site of the injury a papule about three-eighths of an inch in diameter developed. The right axillary lymphnodes became enlarged and painful. The fever varied between 99° and 102° F. for one week. During the second week of illness the temperature remained practically at a normal level. No lymphangitis of the right arm was observed. The right axillary lymphnodes did not suppurate.

The onset of the husband's illness occurred on November 19. The symptoms were practically the same as those of his wife. The highest temperature recorded was 102° F. The fever continued for 2 weeks. The right axillary lymphnodes enlarged to the size of a hen's egg, but gave no evidence of suppuration.

The serums of Mr. and Mrs. G. H., collected on December 10, 1929, showed positive agglutination of *Bacterium tulareense* in all dilutions to 1:640. Similar results were obtained by Doctor Francis.

COMMENT

The serologic findings in 3 of these cases (3, 4, 5) are of particular importance in that blood specimens collected on the thirteenth, ninth, and twelfth day following the onset of illness, respectively, gave entirely negative agglutination reactions. Second specimens collected on the twenty-sixth, twenty-seventh and eighteenth day of illness gave strongly positive agglutination reactions. Ordinarily, antitularense agglutinins appear in the serum dur-

ing the second week of illness. The lesson to be derived from our experience with these 3 cases is that repeated agglutination tests should be carried out in those cases in which the clinical picture of tularemia is strongly suggestive and in which the first or second agglutination tests have been negative.

The accidental discovery of tularemia in a woman (case 5) who had entered the hospital for another purpose, indicates the ease with which the presence of tularemia may be overlooked. This experience lends further strength to the writer's belief that the disease is much more widespread than the figures derived from the literature would appear to indicate.

TREATMENT

In the writer's original report of his experiences with the first 49 cases of tularemia occurring in and about Dayton, the suggestion was made that the intravenous introduction of whole blood or serum of individuals who had made a good recovery from tularemia might produce a favorable effect on the course of the disease. Since that time 8 Dayton patients suffering from the acute manifestations of the disease have been transfused with varying amounts (200 and 500 cc.) of blood from compatible donors who have made a complete recovery from the disease. This form of treatment appears to have arrested the progress of the disease.

A personal communication from Doctor Sydney R. Miller of Baltimore, tells of a very severe case of tularemia in which a fatal outcome seemed inevitable. The patient was given 75 cc. of convalescent serum intravenously. The serum was obtained from a recently recovered case of tularemia, in which the antitularense agglutinin titer was 1:640. Within 12 hours the patient's temperature had dropped from 104° to 99° F. and he was subjectively much improved. The following day the temperature rose again to 103° F.; a similar quantity of immune serum was again given intravenously followed by an abrupt drop of the temperature to a normal level, following which there was practically no elevation of temperature and the patient made a rapid recovery.

These findings appear to indicate that the use of immune serum may have considerable value in the treatment of this disease. No definite

conclusions can be drawn from the apparently favorable response in such a small number of cases. It is the writer's hope, however, that other investigators will give this method of treatment a trial and report their results.

SUMMARY AND CONCLUSIONS

1. Within the past 5 years tularemia has risen from comparative obscurity to the position of a major public health problem. Recent reports from Norway and Russia, together with previous reports from Japan and England, indicate that the disease is probably world-wide in its distribution.

2. Newly discovered animal hosts and insect vectors indicate the ever-widening spread of the disease and further insure its perpetuation. Many new sources of human infection other than the wild rabbit have been described.

3. Eighty-eight cases of tularemia have been encountered by the writer, 84 of which have occurred in or about Dayton, Ohio. This represents the largest number of cases to be discovered in such a circumscribed area.

4. The gross and microscopic pathology of tularemia as it occurs in man and animals is briefly described, together with a description of the experimental production of the ulceroglandular, oculoglandular and glandular forms of the disease in guinea pigs.

5. Eight recently encountered cases of tularemia are reported for the first time.

6. The use of immune human serum appears to have a favorable effect upon the course of the disease.

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TUBERCULOSIS OF THE SKIN*

CLEVELAND WHITE, M. D.

CHICAGO

Introduction. Tuberculosis of the skin is occasionally encountered and, of course, early diagnosis is desirable. In some instances, it is essentially a local cutaneous manifestation; in other cases, it is a mirror of very serious organic involvement.

Tuberculosis of the skin is burdened with many superfluous names like many other dermatological entities. Terminology is naturally inconsequential; the important item is whether the suspected lesion is tuberculous or not. The unusually wide range and clinical variety of tuberculous lesions of the skin and mucous membranes makes the diagnosis difficult at times. A more extensive appreciation would soon increase its value as an aid in the diagnosis of systemic disease. It seems timely to emphasize the diagnostic earmarks to arouse suspicion enough in suspected cases to make a thorough study. Darier¹ states that the cutaneous manifestations of tuberculosis constitute at the present day an important chapter in dermatology. In this presentation only actual tuberculosis will be dealt with; there is still some confusion concerning several clinical entities which may be due to attenuated tuberculosis or due to the toxins of this bacillus. Sweany's² recent work brings up the possibility of mutation forms of the tubercle bacilli in producing some cutaneous syndromes.

Diagnostic Features. As emphasized by Stokes,³ the accessibility of the skin to visual examination makes it possible to do in life what is denied in tuberculosis of deeper structures, to see the tubercle in situ. The cutaneous tubercle or apple jelly nodule can be seen by glass pressure which expresses the blood supply from the

*From the Department of Dermatology, Northwestern University Medical School.

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inflamed surrounding tissue; it is well known that tubercles do not sharply differentiate certain types of cutaneous tuberculosis and in others, due to the violent destruction of tissue and organisms, the tubercles may not have time to form. However, the cutaneous tubercle is common enough in processes like lupus vulgaris, in the dry lupus vulgaris erythematoïdes, and in certain forms of inoculation tuberculosis to make its recognition very helpful in differentiating a tuberculous granuloma from other clinical entities.

Stokes describes the cutaneous tubercle as a small translucent brownish or apple-jelly colored infiltration, rarely more than 2 or 3 mm. in diameter, entirely invisible against its inflammatory background until the blood has been expressed from the surrounding tissue by pressure from some transparent object as a glass slide a glass tongue depressor, etc.

In cases of doubt, a small section can be excised under local anesthesia for pathological study. To one versed in dermatological histology, tuberculosis can usually be recognized by the microscopical picture. In some cases it is difficult to differentiate histologically from syphilis. In using the therapeutic test between syphilis and tuberculosis, it is well not to use any arsphenamin product for the latter has marked if only temporary non-specific effects in cutaneous tuberculosis. Mercury or bismuth should be used. A positive blood serological test would, of course, help favor the diagnosis of lues.

Clinically epithelioma, besides syphilis, may simulate tuberculosis. Epithelioma, of course, has a pearly border; its border is distinctly indurated, it rarely heals enough to form a scar. Epithelioma has quite a typical histological picture.

Tertiary cutaneous lues spreads peripherally, often has arciform configuration and leaves a smooth atrophic scar. Tuberculous scars are usually hypertrophic and the ulcers are non-indurated with ragged undermined borders. A coexistence of undoubtedly tuberculous manifestations may permit a presumptive conclusion.

In the past three years, some twenty-three cases of tuberculosis of the skin have been observed.

ILLUSTRATIVE CASE REPORTS

1. LUPUS VULGARIS ON FACE IN WOMAN OF 68

This name is usually applied to the type of chronic tuberculosis on the face (especially around nose) and occasionally on the trunk and extremities. It owes its traditional name to the ulcerating, gnawing, devouring tendency frequently assumed by it (Darier). It is the most common as well as one of the most polymorphous and most obstinate form of cutaneous tuberculosis. It usually begins in childhood.

This patient had had the lesions on the left side of her nose for three years, and the left cheek for three months. Her general health was excellent; x-ray examination of the chest reported no appreciable pathology. According to her history, she had had considerable x-ray and radium treatment to her nose; at least there were evidences of x-ray dermatitis, and keratoses, and a small beginning epithelioma from excessive x-ray. The latter was destroyed by electrothermy. The Kromayer lamp to the cheek, plus a high vitamine diet, has practically cleared the areas on her left cheek. (Diet will be discussed more in detail under therapy).

2. LUPUS VULGARIS ON BACK IN ADULT

Mrs. B. E., aged fifty-one, had had a slightly elevated brownish area on the right shoulder for ten years. She was seen through the courtesy of Dr. J. E. Kemp of the Dermatology Department of the Johns Hopkins Hospital in Baltimore, and was referred with the above diagnosis (which had been confirmed by histological section). A thorough examination at the above hospital had revealed no apparent internal visceral involvement. Treatment with the water cooled lamp has produced a clinical cure.

3. MULTIPLE DISSEMINATED TUBERCULOSIS OF SKIN FOLLOWING MEASLES

An office girl of nineteen had an eruption on her face and upper chest following measles at the age of eleven. The patient was seen through the kindness of Dr. E. J. Wexler. Her general health was excellent and no lung involvement was detected. Examination of the skin revealed four discrete nodules on her forehead, three on the left side of her face near the ear, and some six located irregularly on the upper chest. A biopsy taken from one on the left part of the chest shows the structure of typical tuberculosis. General alpine light treatments and a modified Gerson diet (discussed later) have produced almost entire clinical involution. This unusual form is not very common and usually occurs in children following one of the exanthemata.

4. WARTY OR VERRUCOUS TYPE

A young man of 24, a patient of Dr. Leslie MacNaughton, had warty lesions covering all the skin of the right buttock. There were no subjective symptoms and the lesions had developed in four months time. No tuberculosis was detected elsewhere. This type of tuberculosis is considered to be always produced by direct inoculation and hence is considered an inoculation

type of cutaneous tuberculosis. No direct contacts were found. This area in three months time has involuted 90 per cent under conservative treatment, and he has continued work all the time.

5. TUBERCULOUS ULCER

A young man of 29, of the athlete type, a patient of Dr. S. J. Sullivan, had had an ulceration around his anus for several weeks. The localization and the undermined border clinically was tuberculosis—a biopsy showed typical tuberculosis. X-ray of the chest showed an extensive active tuberculous involvement. Naturally systemic treatment was imperative, and he was placed in a sanitarium. However, the process was very active and he died in a few months' time. As a rule, tuberculous ulcer is observed only in already badly infected adults.

6. TUBERCULOSIS OF THE MOUTH

A young man of twenty-two (patient of Dr. H. H. Bozer) had a solitary ulcer on the roof of the mouth for several months. Clinically it was a text-book replica of a tuberculous ulcer; histologically, it was typical tuberculosis. It is well known that there are two seats of election for tuberculous ulcers, viz: in the mouth, on the lips, tongue, the inner aspect of the cheeks, the pharynx, or around the mouth; or,² at the anus and its surroundings. Physical examination of this patient and repeated chest x-rays showed no apparent tuberculosis. Naturally this type of ulceration is usually associated with active pulmonary foci.

Treatments with the Kromayer lamp locally produced a clinical cure. Mucous membrane of the mouth is involved in many cases of cutaneous tuberculosis.

TREATMENT

The use of the alpine lamp, dietary measures, medication with phosphorized cod liver oil, and surgical electric-thermy comprise probably the best and most conservative management at the present time. Of course, in many cases, the general treatment of the patient is of extreme importance. In some patients, the general management which is necessary in internal visceral tuberculosis is applicable when the skin is manifestly secondarily involved.

A brief discussion of some of the new dietary measures is indicated—the following notes are freely quoted from Andrews.⁴ A diet low in sodium chloride, protein and carbohydrate and rich in fats and vitamins was devised empirically by Gerson. Dr. Edgar Mayer stated "that definite healing was observed in advanced cases of lupus vulgaris of the face and mucous membranes that had previously been resistant to all

other forms of accepted treatment. . . . These results were far more striking than those claimed for other forms of tuberculosis. . . . Within a few days after the beginning of the treatment a retrogression of the swelling and a change in the color in the vicinity of the lupus nodules were often noticed."

However, there are some contradictory reports. All in all, my personal experience has been quite favorable in a goodly number of this brief series. It was not used as strictly as Gerson originally advocated, and not used exclusively, but was combined with the local therapy.

Axmann⁵ believes that lupus patients should receive the Gerson diet and the usual local therapy—as most of these patients are ambulatory, he believes in ambulatory treatment. He had marked success in fifty-five cases. He also points out that as yet it has not been determined whether the therapeutic results of this diet are due to the diet as a whole or to the phosphorized cod liver oil.

It is generally accepted that phototherapy heretofore has given the best results of any method yet employed. Radio therapy (x-ray and radium) is being discarded by more and more able men, although complete cures are apparently established in isolated cases. It is felt that the x-ray treatment must be pushed to the point of actual dermatitis to be of any material benefit in many cases which may result in disfiguring telangiectasia and worse yet in x-ray cancer.

Andrews has had very good results with surgical diathermy, followed by the alpine lamp. Gold salts have not given very good results in actual tuberculosis of the skin, although there have been a few isolated noteworthy achievements.

SUMMARY

Attention is called to the ever present possibility of tuberculosis of the skin and six illustrative cases are cited.

The possibility of this cutaneous finding being of immense importance in uncovering a more serious internal status must be kept in mind. In the words of Stokes, this last possibility means that the dermatologist at his best should not merely be a mouther of hard names, with a

specialty only half a centimeter deep, but an internist, whose major interest is that remarkably efficient and highly complex organ or rather group of organs, the skin.

104 South Michigan Avenue.

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DISCUSSION

Dr. W. B. Wakefield (Peoria): The important part of this paper, it seems, is to bring out the point that tuberculosis of the skin is really, after all, more or less a common disease, and we should ever be on the lookout for this condition when there is a skin disease, the etiology of which is not very clear. Almost anyone can recognize an ulcerated dermatitis or an ulcerated tubercular lesion, which latter however, is not very common in the districts that are not thickly populated. Probably in these latter localities we will undoubtedly have many more of the ulcerated types with the undermined edges. But it is the younger individuals, from sixteen to twenty-five years of age, who present oftentimes what apparently is an acne of one type or another, who really are infected with tuberculosis and require considerable observation, considerable time and study, in order to eliminate this disease as one of the possibilities of the etiology of the condition for which they seek relief. So, therefore, we should be rather slow in making a diagnosis in those conditions where their symptoms are not real clear.

The undermined edges of almost any open lesion that has existed for any length of time at all of course almost always point to tubercular borders which have broken down.

As to the use of bismuth or of mercury as a diagnostic feature in ruling out syphilis, we know that oftentimes arsenic will improve tubercular lesions to a considerable extent. Therapy with the quartz lamp is undoubtedly a useful agent in tuberculosis of the skin. The manufacturers of the lamps sometimes unduly raise our hopes as to their efficiency to cure many diseases, but here is one disease,—tuberculosis of the skin,—where it does seem to be at its greatest usefulness, and particularly the water-cooled lamp in the ulcerated types and in the tubercular wart.

Oftentimes, of course, those lesions can be removed by surgical means if they are small, and it is practical and is the best and easiest method.

I am greatly interested in Dr. White's diet. I do not know much about that.

I do not see very much tuberculosis of the skin, particularly of the older types. I have always been very much surprised to see the small amount of tuberculosis of the skin that is present in public institutions where this disease is treated,—in the sanitariums. It certainly is not a very common thing.

On the whole, the value of this paper consists in calling to our attention the fact that tuberculosis of the skin is probably more common than is generally known.

Dr. J. H. Fulgham (East St. Louis): This is a subject that does not come into the category of internal medicine to any great extent. In fact we rarely see it. Perhaps we do not recognize it. We internists should have our eyes open for dermal manifestations of tubercular disease.

I was glad to hear the Doctor discuss the relative prevalence of the Gerson treatment by the newer dietary measures that have been advocated and ultraviolet light. The chemical therapy, so-called, is the thing that has been often tried in various forms of tuberculosis, but it has never held attention very long.

I did not feel at the time that we heard a great deal about the Gerson treatment of skin diseases, vulgaris for instance, that this would long prove a valuable factor. I thought that it would probably soon wear out, and I think it has. After all, general measures of diet and hygienic control, as in almost all types of non-pulmonary tuberculous activity, and ultraviolet light seem to be advocated in bone and joint tuberculosis, glandular tuberculosis, chest tuberculosis, and skin tuberculosis.

Dr. Cleveland J. White, Chicago: The interesting part, as I said, is that most of these cases are seen in ambulatory practice. Even in those who have not reached the stage of ulceration, I think it is important in some to make biopsies. I think we get fooled occasionally by some of the non-suspected nodules because they are isolated and are not considered of much moment and are non-painful. The laboratory is extremely valuable at times.

To me the dermatological findings bring to the foreground the possibilities that it means to the patient's general health to interpret these and investigate further to see if there is any active internal tuberculosis.

I am both for and against the diet; as far as results are concerned, I saw several cases in Chicago that improved immediately on the Gerson diet along with other treatment and clinically became well. It especially means something to the young women who have tuberculosis involvement of the exposed parts to gain a cure without scarring.

Dr. Wakefield brought up the fact that tuberculosis of the skin is seldom seen in sanitariums. It is to be seen on the street, if you please, rather than in the tuberculosis institutions. Of course, the grossly infected ones are the ones who have the ulcerations.

HEART DISEASE, PREVENTION AND AFTER CARE*

I. C. RIGGIN, M. D.
NEW YORK, N. Y.

The consideration of etiology in making diagnoses and prescribing treatment and after care for those suffering with cardiac diseases assumes greater importance each succeeding year.

We know that heart disease ranks first in the list of causes of death at the present time. For every death from heart disease that occurs during a year there are probably ten persons living impaired and deficient lives because of the breakdown of the heart function.

Heart disease has been generally regarded as a disease of old age and, while it is true that the majority of deaths from this disease occur after the age of fifty, yet heart disease is just as important in the early years of life as many of the diseases commonly associated with childhood and early youth.

The above statements give only an incomplete idea of the great community problem and the amount of individual suffering and limitation of activity which can be known only to those who come in close contact with a large number of cases. It is the practicing physician who fully realizes the handicap endured by a sufferer from heart disease.

The causes giving rise to the impairment of the heart must be considered. Diseases of the heart may not result from a single cause, but may be the outcome of a combination of many. We have the so-called functional case in which the symptoms may be very distressing, but are not usually of very great importance unless allowed to continue for some length of time when they may result in permanent impairment. On the other hand there is the condition which is more serious in character and involves one of the heart itself, such as an impairment of the valves or musculature. This often follows an acute infection occurring elsewhere in the body, such as tonsillitis, dental infections, acute rheumatic fever or syphilis.

A large group of heart defects may be classified as those caused by degenerative diseases. In

this group are included heart disease associated with arteriosclerosis, hypertension, nephritis, and many others. Approximately 40% of all heart cases are of this type. It is chronic in character and usually occurs in persons over the age of fifty. Reduction of this type of heart disease may be materially aided by the application of available knowledge of hygienic living.

The etiological factor of 10% of heart disease is syphilis. The application of known methods of prevention will in due time tend to bring about a marked decrease in cases of syphilitic heart disease.

Statistics supplied by the American Heart Association show that approximately 7 out of every 1,000 school children have some heart defect which impairs their general health, and between the ages of 10 to 14, heart disease is the greatest cause of death. The great number of heart affections discovered among children are directly attributable to some form of rheumatic infection. By many observers it has been conservatively estimated that 25% of all heart disease is due to rheumatic infection and that 75% of heart disease which occurs in children under the age of 10 is rheumatic, while only 10 to 15% of rheumatic heart disease occurs in persons over 40 years of age.

Rheumatic infection is very seldom found in children under three years of age and it is comparatively rare under four years. The maximum incidence is found between the ages of seven and nine. In children, rheumatic manifestations are more commonly found among girls than boys. The chronic forms of the disease show a much greater preponderance in this respect.

There seems to be no clear evidence that there is any notable difference between races as to susceptibility to rheumatic heart disease when not influenced by other factors. Rheumatic fever is unquestionably more prevalent in the temperate zones and is most common in a climate that is damp and cold. It is much more widespread than has been thought.

The part heredity plays in rheumatic heart disease is a mooted question although statistical evidence would tend to favor a very definite hereditary factor. However, this must be discounted by the fact that a disease with such a

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wide prevalence might necessarily affect several members of any family.

The incidence of rheumatic infection as related to the seasons is not clearly marked. Wilson¹ reports from a study made during 1922 that 31% of the rheumatic manifestations occur during the winter; 33% in the spring; 29% in summer and 7% in the fall. Other writers state that the maximum incidence occurs in the autumn. Density of population seems to be a predisposing factor toward an increased incidence of this disease. Moreover, rheumatism in children is not as common among the well-to-do classes as in the artisan group. It is thought that rheumatic fever and its various manifestations is undoubtedly an infection, and it has been stated that rheumatism may be transmitted from person to person through direct contact. St. Lawrence² of New York made an investigation into the incidence of rheumatism and tuberculosis in families. He states that "in 100 families, in each of which at least one member had suffered from a manifestation of acute rheumatism, he found the percentage of cases of actual rheumatism among all the exposed persons to be 14.8; a similar investigation in respect to tuberculous families, in each of which at least one member had active tuberculosis, revealed the percentage of actual cases among persons exposed to be 14.6, and he points out that 'it is difficult to evade the proposition that rheumatic disease, and therefore cardiac disease, is communicable to a degree not generally imagined.'"

That rheumatism is an infective condition I think we can hardly question although the exact infecting organism is not known at present. It is believed that the most frequent portal of entry is through the tonsils. Frequent occurrence of tonsillitis before any other manifestations of rheumatism, tends strongly toward the support of this theory. It is possible, however, that the infection may enter through the nose, throat, alimentary tract, or decayed teeth. Rheumatic infection is now almost universally regarded as a general infection which, when the joints are involved, is spoken of as polyarthritis; when the brain is affected, as chorea or St. Vitus Dance; and when the heart is involved, as rheumatic heart disease. Although rheumatic infection may manifest itself as an involvement of the

joints, or as chorea, it is important to realize that the heart is often affected simultaneously or just following these ailments, or more important still, that the heart may be the first and apparently the only organ involved, and that it is possible for this to occur without any other evidence of rheumatic fever other than signs and symptoms accompanying an acute carditis. But when there are no signs of cardiac involvement potential or possible heart disease must be considered.

St. Lawrence observed 65 children who had manifestations of rheumatic heart disease elsewhere than in the heart and these cases of potential cardiac disease, as he called them, were kept under observation and management for four and one-half years. At the end of that time 25% of them had developed a cardiac lesion of some kind; the remaining 75% he regards as certain to develop cardiac lesions as many of the children had constant severe recurrence of rheumatic fever or chorea, and when this occurs such persons rarely fail to eventually contract a lesion in the heart. He concludes that only when a child has remained free from recurrence of rheumatic manifestations for three years may recovery be regarded as fairly safe. Rheumatic heart disease should be regarded as one of the manifestations of rheumatic fever and not as a complication.

Other indications of rheumatic infection may be joint pains, muscle or growing pains, torticollis, tonsillitis, purpura or erythematata. In some cases there may be persistent fever and other signs of infection without definite clinical evidence of activity in any specific tissue. The idea that rheumatic fever is a disease characterized by polyarthritis, high fever and profuse sweating is not always applicable to the condition as it occurs in children. Often it manifests itself in the child as mild muscle or joint pains, chorea, or subcutaneous nodules. Rheumatic heart disease in many cases is subacute—it may be active or inactive.

In the active stage, there are often times very few symptoms to aid in diagnosing the rheumatic infection other than general malaise, loss of appetite, paleness and listlessness.

Rheumatic heart disease in its active stage manifests itself as carditis. As the name implies,

this is an infection of the heart involving acute inflammation of the pericardium, myocardium or the endocardium, either alone or in combination. Pancarditis, or inflammation of the three structures of the heart, occurs quite frequently, though not always. Myocarditis occurs in every case of rheumatic heart disease. The myocardial involvement may show itself in the active stages by evidence of acute myocarditis and, after healing, by permanent enlargement of the heart. Endocardial involvement shows itself in the active stages of rheumatic heart disease as acute endocarditis and valvulitis. Later, with healing, chronic structural changes in the valves remain, these being most commonly mitral insufficiency and stenosis. There is often a latent period of varying duration from the onset of the original rheumatic infection to the discovery of cardiac valvular disease. It has often been observed that definite signs of cardiac failure are frequently preceded, during a period of from two to six weeks, by a rather characteristic group of symptoms consisting in the main of loss of weight, a moderate daily rise in temperature, increased pulse rate, fatigue, diminished exercise tolerance and vital capacity.

Rheumatic heart disease is generally a chronic disease running an extremely variable course. Some patients die after a short severe course; others show a prolonged course with continuously active heart infection from the first attack until death, while others show alternate periods of activity and quiescence. Some, after one or more periods of active heart involvement, apparently remain free from infection for years.

The main point in considering rheumatic heart disease in children is not only the recognition of the disease, but its prevention, treatment and after care. As rheumatism is an infection, although the exact infective agent is unknown, its portal of entry should be sought. Diseased tonsils should be removed as tonsillectomy apparently is an important factor in controlling the recurrence of acute rheumatism and rheumatic pains. Unhealthy conditions of the nasopharynx should receive attention; decayed teeth and infected sinuses should be treated, and of extreme importance would be the fact of having every child who manifests any symptoms of rheumatic disease sent to a convalescent

home or to the country for a long term of rest or quiet. Medicinal therapy has for its object the combatting of the rheumatic infection. Unfortunately, where damage has already been done to the heart, repair is hardly possible, but it may be that further harm could be prevented, providing every precaution is taken.

Those with rheumatic manifestations require complete rest in bed for as long as there is any indication of active disease, such as constitutional signs and symptoms, and changes in the physical signs from the cardiac standpoint; even improvement in the general condition should be accepted as an indication that active infective processes have not ceased. Although drugs are important as aids in carrying out treatment, they should not be allowed to replace rest, convalescence and improved hygienic living. Prolonged convalescence care is absolutely essential for children with rheumatic manifestations and unless this is provided the probability of developing rheumatic heart disease is greatly increased.

Children who have already acquired heart disease should have a careful physical examination in order that the degree of disability may be determined and their school activities curtailed. School children suffering from cardiac disease should be excused from running between classes; they should be asked to recite first and their home work should be regulated. For those who need it, corrective exercise should be recommended as this will enlarge the heart capacity and indirectly strengthen the heart where compensation of this organ has already been established.

The American Heart Association has evolved the following functional classification for those with heart disease:

FUNCTIONAL CAPACITY

1. Patients with organic heart disease, able to carry on ordinary physical activity without discomfort.
2. Patients with organic heart disease, unable to carry on ordinary physical activity without discomfort.
 - a. Activity slightly limited.
 - b. Activity greatly limited.
3. Patients with organic heart disease and with symptoms or signs of heart failure when at rest, unable to carry on any physical activity without discomfort.

E. POSSIBLE HEART DISEASE

Patients who show abnormal signs or symptoms referable to the heart but in whom the diagnosis of heart disease is uncertain.

F. POTENTIAL HEART DISEASE

Patients without circulatory disease whom it is advisable to follow because of the presence or history of an etiological factor which might cause heart disease.

If each child is placed in one of these groups, it will simplify to a marked degree the work of the physician, the public health nurse and the social worker in guiding the activities of the child.

A child who is known to have a heart impairment should be kept in bed or quiet at home for at least one or two months, or until all evidence of the activity of the infection has ceased. The general nutrition should be near normal and there should be an increase in weight. The period of convalescence should be increased should he show signs of cardiac muscle decompensation in the acute illness. Particular points that should be observed in the care of the child with heart trouble are:

1. The child should be carefully examined by a competent physician to ascertain if the condition is acute or chronic, and if active or quiet.
2. For those with an active heart condition, complete rest in bed, under the constant supervision of a physician, is essential.
3. In the quiescent, of which there are a far greater number, it is most important that proper rest, fresh air and food be provided.
4. All defects, such as diseased tonsils and infected teeth, should be corrected at once.
5. The proper kind of clothing should be provided to guard against wet feet and chilling of the body. Too much clothing, as well as too little, often results in chilling.
6. Proper vocational guidance is most important in order that the child may be trained for a desirable occupation as well as one within his physical capacity. The physician's advice in this regard is absolutely necessary.

It can be seen that the prevention of heart disease would naturally lessen the need for after care in all its phases. It would tend to lessen individual suffering and decrease the economic loss to the community which naturally results from an increase in the morbidity and mortality from heart disease. Each person who applies the available knowledge of hygiene to his daily mode of living will postpone the day of growing old and the likelihood of acquiring heart disease. If children could be protected against the infections which so often lead to heart disease, the chances of heart impairment would be greatly diminished. A most valuable aid of all would

be the habit of having a thorough, adequate medical examination by a competent physician. It is a well known fact that the majority of people suffering from heart disease become aware of it accidentally. It is known too that heart impairment may often be entirely cured if taken at an early stage. Many persons suffering from heart disease may lead useful lives if they are willing to live within their limitations, but a favorable outcome is very doubtful unless the patient is constantly under competent medical care.

It is a well known fact that in many types of cardiac disease some degenerative condition or disability is often present for many years and before it actually occurs there is often complete invalidism and dependency on others.

In considering after care of persons suffering from cardiac disease it must be understood that each cardiac case presents its individual problems. Possibly there is definite cardiac psychology to be considered before any attempt can be made to successfully rehabilitate the cardiac who has had a breakdown. Whether this psychology differs from that which must be applied to the treatment of sufferers from other diseases is a matter well worth investigating. The average individual has mistaken ideas about heart disease and one of the first things to be considered in dealing with the cardiac is to overcome the fear of sudden death. We know that sudden death is an uncommon occurrence among heart sufferers. If we review our experiences with cardiac cases, it will be found that there are usually months, and often years, of gradually increasing invalidism before death. This fear of sudden death must be overcome before there can be any great improvement in the physical condition of the patient. We must emphasize the fact that all heart disease is not fatal, though it is more or less incapacitating. Most cardiacs must try to earn a living and it is quite possible, if the heart conditions be discovered early, to teach patients how to live and work without overtaxing their hearts. Thus we see that the cardiac case must be considered from the viewpoint of the individual rather than from the group.

Convalescent care for the cardiac is of the utmost importance. Those actually suffering from heart disease usually have a condition in which the heart is definitely and permanently impaired and the care of it becomes a life-long

problem. Following a breakdown, the cardiac is sent into the hospital for the period of acute illness. Unfortunately, due to the crowded condition of most of our hospitals, the cardiac is often discharged prematurely and if he returns to his home it is only a question of time until he is back in the hospital in a worse condition than before. The problem can only be solved successfully by having the cardiac understand the limitations within which he must live. This can be best accomplished in a well supervised convalescent home. The patient may then return to a modified routine of his daily life under the careful supervision of the private physician or the clinician.

It is necessary to provide convalescent care for the definite cardiac and also the potential cardiac as follows: 1. Those convalescing from infections which usually or occasionally damage the heart. 2. Those with actually impaired hearts who are recovering from infections. 3. Those with impaired hearts in which the condition is stationary or possibly slowly progressing. 4. Those with advanced heart conditions on the border-line of heart failure or where return to ordinary activity can only be of short duration.

It is important that a complete record of each cardiac be kept, this record to include the following: 1. All data bearing on the history of the patient. 2. A record of the physical examination. 3. Reports of the progress of the condition which is under observation. 4. A record of the patient's social and economic history. 5. An abstract of the salient features of the hospital history if the patient has been in the hospital.

In rehabilitation the question arises "How is the patient going to react to the diagnosis and the necessary adjustment and routine?" We must study the patient, learn his personality, and find out if he is stable or unstable in order that we may know just what to tell him concerning his diagnosis and how we shall present the necessary information to him. The physician is all important in this connection; the patient should never leave the office or clinic with fear. Any cardiac reserve should be explained and it may be necessary to furnish this information to the family. The cardiac should not be pampered to the extent of being made a chronic invalid when he is able to perform certain types of work with-

out endangering himself. Often, when a patient is made to feel that he is a chronic invalid, a condition arises which is more of a handicap than the heart condition itself. We must instill hope in the patient, for heart disease, if properly cared for, may become stationary. There are very few school children unable to continue their studies, and education means a better earning capacity and less physical effort.

It is the young adult working his way and dependent upon his own earnings who is perhaps the most difficult type to adjust. He becomes despondent when he has to lay aside ambitions; often after repeated failure to carry on certain kinds of activity, and after many examinations by employers' physicians, he becomes indifferent to work of any kind. At this time it is essential to have the adjustment made as soon as possible for it is generally agreed that the majority of cardiacs are better off at work though the type and amount of work must be carefully considered.

After the breakdown and the subsequent period of convalescence, the cardiac is ready to be placed in a position suited to his decreased physical capacity. Perhaps no other disease handicaps the patient for self-support as long or as persistently as does heart disease. Today, with our increased attention to rehabilitation and occupational therapy, men and women handicapped by heart disease have been aided in finding work within their limitations and are able to provide for themselves and often those dependent upon them for support.

We have said before that each case presents its own problems. Like all workers, the cardiac wants employment that is congenial as well as work that comes within his physical capacity. His own desires and inclinations must be considered and as the cardiac is apt to worry about himself and become depressed, he should be adjusted to work and whenever possible be allowed to remain at his old trade. If it is necessary to find an entirely new occupation, it is very important that the placement worker have a definite and accurate report of the cardiac patient's condition. When a heart condition exists, it is absolutely necessary to depend upon the advice of the physician. The worker cannot proceed intelligently and placement cannot be made suc-

cessfully unless she knows how much each cardiac is capable of performing. This is being accomplished in accordance with the functional classification recommended by the American Heart Association.

There should be the closest cooperation between the schools, the social agencies, the day nurseries and other organizations. Referred cases should be diagnosed and any necessary instructions given. Boards of Health and Education are now seeking advice for guidance in their work with the school children.

Social service work is of the utmost importance and the nurse who is the medical social worker is absolutely essential in the rehabilitation of the cardiac. Without her it is impossible for the cardiologist to keep in touch with the patient. She not only familiarizes herself with the home conditions, but sees that the physician's instructions are carried out. The social worker may make suggestions for readjustment in the home and help to work out plans for industrial placement or vocational training with the proper agencies. She it is who helps to educate the child and his parents as to his limitations.

The need for constant medical supervision in the cardiac clinic or by the private physician cannot be over-emphasized. When cases have been referred to the clinic by the private physician and returned to him, he should realize that the same advice and adjustment is necessary, both medically and socially, as is given to the clinic patients, and that the medical social service of the clinic is available for his use in connection with referred cases.

It has not seemed within our province to discuss the question of medication, yet it may be well to state that our knowledge of heart disease has been greatly increased during the past century and particularly within the past decade. It is only within recent years that the use of certain drugs in the study of heart disease has been instituted. Important contributions in the study of heart disease have been made through the use of such instruments as the polioscope, the electrocardiograph and the sphygmomanometer and many other instruments. We now possess accurate and delicate methods for the study of drug action on the heart and the effort is being constantly made to propound drugs which will produce the desired effects in the treatment of

heart disease. It would appear that we may look forward to further advances in the future. As previously stated, heart disease, if it is properly cared for may become stationary in many instances, and if the proper medical advice and supervision are provided, the individual's limitations and how he may live within them pointed out, many a cardiac may secure a position which can be acceptably filled. A happy and useful life may then be lived by many heart patients in spite of their handicap.

Adequate care of tonsillitis and sore throats which may be associated with rheumatic fever; prevention of cases of typhoid, diphtheria, scarlet fever, pneumonia and many other diseases; the reduction of syphilis; and saner and more temperate methods of living, will aid very materially in reducing heart impairments.

With a more general knowledge of the causes of heart disease, a wider recognition of the value of detecting minor abnormalities of the heart function in the incipient stages, and a whole-hearted determination on the part of physicians and organized groups to work out plans for the eradication and amelioration of cardiac disease, much may be done to help the individual and lessen the consequent burden on the community.
450 Seventh Avenue.

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LYMPHOSARCOMA OF THE CECUM REPORT OF A CASE

LOUIS HANDELMAN, M.D.,
CHICAGO

Incidence. The literature is not replete with reports on lymphosarcoma of the cecum. In search for statistical data of this lesion one must delve through numerous papers on sarcoma of the gastro-intestinal tract. It at once becomes

evident that, while lymphosarcoma of the cecum is a highly malignant disease, it is fortunately a very rare condition. According to Rankin¹ only 300 cases of lymphosarcoma of the gastro-intestinal tract were reported up to 1928. Rankin and Chumley² report 18 cases of lymphosarcoma of the large intestine, 13 of which were cecal. Erdman and Clark³ quote that during 15 years' study of post-mortem material at Prague only 13 cases were found in 13,036 sections. In relation to carcinomatous lesions of the gastro-intestinal tract all sarcomatous tumors constitute only 4%. The rarity of this condition is suffi-

cient explanation for the infrequency of making a clinical diagnosis. lymphocytoma. Mallory⁶ employs the term lymphoblastoma to include lymphocytoma, lymphoma, lymphosarcoma, pseudo-leukemia, lymphatic leukemia and Hodgkin's disease. MacCarty's⁷ conception is that Hodgkin's disease, lymphosarcoma, and lymphatic leukemia have a common neoplastic cellular origin. In Hodgkin's disease the overgrowth of cells remains in the node; in lymphosarcoma the cells invade the surrounding tissue primarily; while in lymphatic leukemia there is at once a general invasion of the lymph and blood streams. But no reason is found explaining this variation in a common

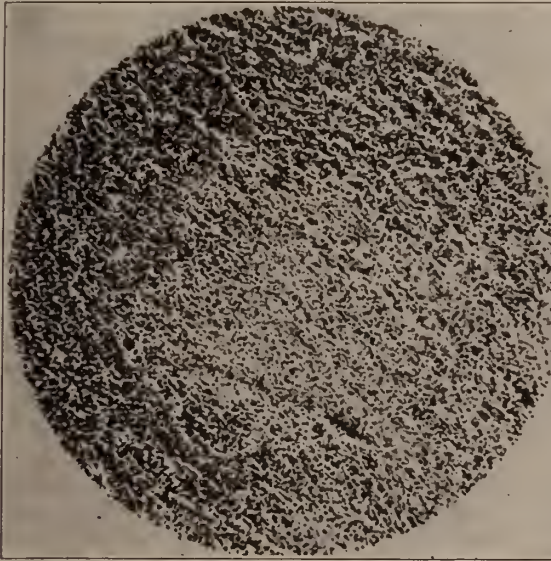


Fig. 1. Section from lymphosarcoma of cecum showing dense infiltration of cells, most of which are lymphocytes; magnification of 150 diameters.

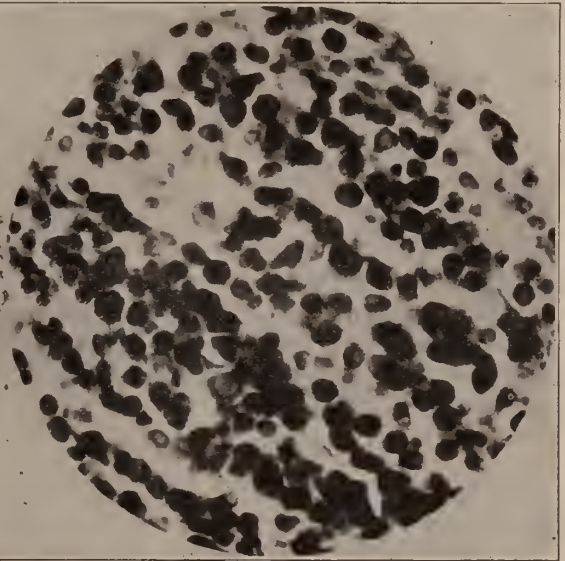


Fig. 2. Section from lymphosarcoma of cecum showing small and large lymphocytes with dark staining pyknotic nuclei and a rather abundant protoplasm; magnification of 900 diameters.

cient explanation for the infrequency of making a clinical diagnosis.

Pathology. The nature of this tumor, as well as of all lymphoid tumors, was not well defined for a long time. To Kundrat⁴ belongs the credit for isolating lymphosarcoma from a group of closely allied diseases of the lymphatics, all of which were formerly included under the term of pseudoleukemia or aleukemic lymphoma. He it was who pointed out that in lymphosarcoma the systemic effects were not present—that it was primarily a regional disease. Ewing⁵ defines lymphosarcoma as a true malignant neoplasm arising in the lymphatic tissue from a proliferation of atypical lymphocytes; he designates this type of tumor also as a lymphoblastoma and

neoplastic cell! De Noyelles⁸ believes that the predominating cell in lymphosarcoma is akin to the transitional mononuclear cells of the blood. But, due to chronic irritation or to some specific toxin, these cells take on a perverted role and develop into lymphosarcoma. Bargin⁹, however, shatters this theory by proving that chronic irritation or toxemia have little influence on the genesis of this neoplasm. In a very extensive experience with chronic ulcerative colitis he found as a complication only 2 cases of lymphosarcoma. Obviously there is as yet no agreement as to the classification of lymphosarcoma—except that it is a lymphoid tumor of a malignant nature; and certain it is that at present most pathologists agree that there is confusion

and chaos when lymphoid tumors are under discussion.

Symptoms. A clinical diagnosis of this disease is very seldom made, since there are no signs or symptoms that distinguish this type of tumor from any other cecal tumor. Most often the patient complains of intermittent cramp-like abdominal pains, usually diffuse in character and but rarely accompanied by nausea or vomiting. Seldom are there obstructive phenomena; this being due to dilatation of the lumen, which is rather characteristic of this type of tumor. A palpable tumor appears early. Together with these three striking symptoms—cramp-like pains, rapid appearance of a palpable cecal tumor and absence of obstructive phenomena—there usually go other findings associated with malignancy of the bowel. Blood in the stools, loss of weight, pallor, anorexia, weakness and, as a rule, a rapid downward course give added features to the striking picture of cecal lymphosarcoma. As to treatment, Ewing¹⁰ summarizes it comprehensively when he states:

“Local treatment, extirpation, and internal use of arsenic may cause marked or complete regression of the original lesion, but, with rare exceptions, the process recurs.”

REPORT OF A CASE

Mrs. M. L., aged 26, married and the mother of two healthy children, first presented herself at the office of Dr. Ed. Skolnik in September, 1928. Her past and family history was practically negative. In July, 1928, she first began to suffer from cramp-like abdominal pains, especially in the region of the appendix. The pains would usually follow food intake and last from 2 to 24 hours and recur almost daily. There was no constipation, no nausea or vomiting and no blood in the stools. Within one month after onset of symptoms there ensued pallor, anorexia, weakness and loss in weight. Upon examination there was found a tumor mass in the ileo-cecal region; it was fixed, smooth, tender and the size of an orange. At operation on September 20, 1928, a smooth, non-encapsulated tumor mass was found in the ileo-cecal junction. The appendix was embedded in the center of the mass. The ileum was not involved, the wall of the cecum was somewhat thickened and there was no evidence of glandular or visceral metastases. The appendix was freed and removed in the usual manner and the mass dissected away as thoroughly as possible. The abdomen was closed without drainage.

The pathologist reported the mass to be a lymphosarcoma. The patient was thereupon advised to return for a course of x-ray therapy. But, instead, she left the city and was not seen again for two years, during which time she had received no care whatever.

She had regained her weight, color, strength, and appetite and had not suffered from any abdominal disturbance whatever.

In October, 1930, she again began to experience the same symptom complex as in 1928 and when examined early in November, 1930, again revealed a tumor mass in the ileo-cecal area. A second operation was performed in November, 1930. The primary field of operation was absolutely clean and there was no regional or distal involvement. The cecum, however, was greatly thickened, smooth, free and within its lumen could easily be felt a circumferential tumor mass. Resection of the cecum and part of the ileum was done with end to end anastomosis. The patient made an uneventful recovery and left the hospital in two weeks. Within four weeks she received a thorough course of x-ray therapy under the supervision of Dr. M. I. Kaplan.

Dr. I. Davidsohn, pathologist at the Mt. Sinai Hospital, reported on the specimen as follows:

Gross: specimen consists of a cecum and the distal 3 cm. of the ileum. The mucous membrane of the ileum shows no abnormalities. The cecum is filled with a fungating growth originating from the mucous membrane or from the submucosa. It sits on the mucous membrane with a broad base and measures approximately 8x9 cm. The surface is smooth but uneven. The consistency is soft. The color of the cut surface is yellow in some and pink in other places. It is smooth.

Microscopically: sections from the growth (see Figs. 1 and 2) show a dense infiltration with cells, most of which are lymphocytes, small and large, with dark staining pyknotic nuclei and a rather abundant protoplasm. There are also numerous reticulum cells; in some places they actually predominate the picture. In other places the endothelial cells proliferate quite vividly. Mitotic figures are numerous. The growth infiltrates the muscularis. Blood vessels are plentiful. Some are rather large and have only thin walls consisting merely of a lining of endothelial cells.

Diagnosis: Lymphosarcoma.

CONCLUSIONS

Considerable confusion still reigns in the classification of lymphoid tumors.

Lymphosarcoma of the cecum, while an extremely rare form of malignancy, should be considered when a young adult develops a tumor mass in the ileo-cecal region, which grows rapidly and gives rise to almost constant cramp-like pains and no symptoms of constipation.

The prognosis, at least from reports in the literature, is extremely poor.

A case is reported in which laparotomy and apparently incomplete removal of the mass seemed to produce a cessation in the growth of a very malignant type of tumor.

Note: The patient, when seen last on May 12, 1931, was still in excellent condition.
3802 Roosevelt Road.

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STUDIES IN CATATONIC STATES—EFFECTS OF TREATMENT ON THE COLLOIDS OF THE BLOOD IN CATATONICS*

LEAH LURIE, M. D.,
State Psychopathic Institute

F. LeBLANC, M. D.,

CHARLES F. READ, M. D.
Elgin State Hospital

ELGIN, ILLINOIS

The protein in the plasma is not in true solution, but is in the form of colloid particles, easily recognized by the dark field illumination. In health, these particles are fairly small and uniform in size, deflect the light moderately and show very active brownian motion—normal *dispersion*.

In disease, due to acute infection or to chemical intoxication, the colloids undergo profound changes. The protein particles lose their activity and begin to divide into smaller, almost invisible, particles, some of which go into true solution, while some remain insoluble and tend to coalesce, forming large, white, often ringlike bodies, so-called giants—state of dehydration.

Long continued infections or chronic intoxication, give a different ultra-microscopic picture. The protein particles absorb water and metabolites. They increase in size and diminish in number. The particles are a brilliant white;

they move slowly and when they agglutinate, the clumps formed contain fewer particles than those which are formed in dehydration; giants and ringed forms are frequent. These particles tend to precipitate individually or in masses. This state of the protein colloids is called hydration.

McDonagh,¹ of London, was the first to correlate these ultra-microscopic findings with physico-chemical changes in the serum. In dehydration, we find the sedimentation rate shortened; in hydration it is prolonged. The metabolites, as determined chemically, tend to increase in dehydration and to diminish in hydration. The refractometric index of the serum which is quite constant in health, is lowered in dehydration and raised in hydration; so also is the viscosity of the serum.

This colloidal picture of the blood is a guide by which to evaluate the effect of treatment. Certain drugs, like bromides, iodides, hexamethylene, mercury, the barbitol group, the arsphenamines, digitalis, etc., act as dehydrators, but once the hydration is overcome, continued administration brings about toxic action. Thus the bromides and iodides produce acne; hexamethylene produces urinary tenesmus or hematuria; mercury salivation, etc.

Upon the other hand, other drugs produce hydration, the best example of which is insulin. When insulin is used, there is an increase in size of the colloidal protein particles and a decrease of the free metabolites, especially sugar, which becomes adsorbed. But, if an overdose of insulin is given, the sudden increase of the large hydrated particles may precipitate in the brain and cause the well-known insulin convulsion.

Having this changing colloidal picture of the blood in mind, we have undertaken, with the encouragement of Dr. Sidney D. Wilgus, Director of the State Psychopathic Institute, a study of the colloids in the blood of catatonics, with and without treatment.

About five or six years ago, Lorenz and Loevenhart² reported interesting observations on the awakening of stuporous patients after inhalation of a mixture of carbon dioxide and oxygen. They began with five per cent. carbon dioxide and rapidly increased the concentration to twenty per cent.; giving the gases for one minute. The period of stimulation lasted about five

*Read at the Chicago Neurological Society meeting held at the Elgin State Hospital, May 23, 1931.

minutes; the patients then relapsing into the former condition of catatonic stupor. Later, the concentration of carbon dioxide was increased and the length of the inhalation extended to two minutes. The period of stimulation was thus increased to ten or fifteen minutes. With modifications of this method, periods of stimulation lasting up to twenty-five minutes were obtained, but the patients always relapsed into their previous condition immediately after and no permanent benefit was observed.

Karl Langenstrass³ has modified this method still further. He gives his patients a preliminary course of pyrotherapy, raising the temperature on alternate days to 104° F., or more, by intravenous injections of Coley's fluid or typhoid vaccine, giving about fifteen such injections. Following this, the inhalation of carbon dioxide and oxygen is given, beginning with five per cent. carbon dioxide and ninety-five per cent. oxygen, and gradually increasing the former to twenty-five per cent. and decreasing the latter to seventy-five per cent. At this point the inhalation is continued for from twenty-five to thirty minutes. Striking results are reported. Patients who were in stupor from ten months to ten years, improved gradually under this treatment and started to work in the institution; some have even gone home and to work. (Only six cases reported.)

We have adopted a different method of administering CO₂ and oxygen combinations *by subcutaneous injection* instead of inhalation, using the Bayeux instrument, which delivers a definite amount of gas per minute. Our object has been to discover what effect, if any, such therapy might have upon the colloids of the blood serum. Seven catatonics, all of them in almost complete stupor, have been studied thus far. Four to five injections of gas were given at about five day intervals. Physico-chemical and ultra-microscopic examination of the blood was done in all cases before treatment was started and all showed a marked hydration, as seen in the tables.

The first injection consisted of straight carbon dioxide, in doses of 1200 cc to 2500 cc, the male patients receiving the smaller amounts, the females the larger. In the former, the absorption of the gas was markedly slower than in the latter. In every case the colloids of the blood

were dispersed to some extent, as indicated by lowering of the refractive index and viscosity, with alteration of the ultra-microscopic picture toward normal.

In the second injections we used a combination of thirty per cent. carbon dioxide and seventy per cent. oxygen in doses of 2000 cc to 3500 cc, with the result that most of the bloods returned to a state of hydration, although not quite so marked as before the first treatment. We returned then, in some of the patients, to straight carbon dioxide and injected doses as high as 5000 cc, and in others to the combined gases with doses as high as 10,000 cc. We obtained indefinite results. For the fourth and fifth injections, we used in all cases but 500 cc of straight carbon dioxide and in all cases the colloids showed again relative dehydration.

In studying the tables, it is apparent that the refractive index before treatment was above normal in all our cases, ranging from 1.3509 to 1.3541 (1.3500 in normals). The viscosity was also high in all, sometimes as high as 2.3 times water (against 1.5 to 1.75 times water in normals). The ultra-microscopic picture showed, in six of our cases, hydration with precipitation, two of them having, in addition, globulin rings. One case, No. 6, gave a picture of dehydration. After the carbon dioxide treatments the refractive index in all cases came down, the highest being 1.3507, and 1.3482 being the lowest. The viscosity in all cases also came down, as low as 1.6 times water in case No. 6. The ultra-microscopic picture after the treatment gave evidence of dehydration in all and in cases Nos. 2, 5 and 7, even some dispersion.

Clinically, slight improvement occurred at times, but nothing really significant.

Our studies thus far appeared to indicate that:

1. In the physico-chemical and ultra-microscopic examinations of the blood, we have the objective method of evaluating the effect of treatments.
2. The colloids in the blood of catatonics are in a state of hydration.
3. Carbon dioxide is a dehydrator.
4. The mere dehydration of the colloids in catatonics is not sufficient to bring about remission.
5. There must be other underlying conditions

EFFECT OF TREATMENT ON THE COLLOIDS OF THE BLOOD IN CATATONICS

July 27th, 1931.
TABLE 1

CASE	SEDIMENTATION			SUGAR			REFRACTIVE INDEX		
	BEFORE Treatment	AFTER CO ₂	AFTER Vaccine	BEFORE Treatment	AFTER Treatment	AFTER CO ₂	BEFORE Vaccine	AFTER CO ₂	AFTER Vaccine
1.									
M.B.		2'9"	2'39"	70 MG	112 MG	83 MG	1.3523	1.3503	1.3527
2.									
H.D.	1'50"	1'24"	2'10"	125 MG	158 MG	126 MG	1.3541	1.3503	1.3502
3.									
F.G.		1'45"	2'12"	110 MG	155 MG	70 MG	1.3511	1.3499	1.3491
4.									
J.K.		2'20"	2'21"	120 MG	150 MG	72 MG	1.3509	1.3502	1.3512
5.									
W.R.	1'25"	1'24"	2'56"	150 MG	145 MG	84 MG	1.3521	1.3507	1.3504
6.									
C.S.	30"	1'9"	1'35"	180 MG	175 MG	90 MG	1.3520	1.3482	1.3492
7.									
J.S.	1'45"	45"	28"	134 MG	102 MG	75 MG	1.3530	1.3490	1.3505

which must be studied in every case individually and treated accordingly.

Nevertheless, we made one more attempt to treat the same group with one general method, turning our attention this time to intestinal detoxication.

We gave, by subcutaneous injections, a stock vaccine, consisting of strains of hemolytic streptococci and pathogenic gram-negative bacteria. A second vaccine, consisting of non-lactose fermenters, we injected intramuscularly. Eleven injections were given in a period of six weeks. The stock vaccine was given at weekly intervals, 1 cc, increasing the dose by 0.1 cc at each subse-

quent injection; the other vaccine three or four days after the first, 1 cc intramuscularly each time. In conjunction with the vaccine, dihydranol (a hydroxyphenyl derivative of heptane) was used. Three of our patients did not cooperate in taking it. These patients were given a forty per cent. solution of sodium ricineolate in twenty drop doses after meals..

The results, in general, after the vaccine therapy, were much less encouraging than those obtained with carbon dioxide—(See tables.) After vaccine therapy, Case No. 1 came back to hydration. The refractive index went as high as 1.3527, higher than it was even before the

EFFECT OF TREATMENT ON THE COLLOIDS OF THE BLOOD IN CATATONICS

July 27th, 1931.
TABLE 2

CASE	VISCOSITY			ULTRA MICROSCOPIC		
	BEFORE Treatment	AFTER CO ₂	AFTER Vaccine	BEFORE Treatment	AFTER CO ₂	AFTER Vaccine
1.	1.9	1.7	1.8			
M.B.	1	1	1	Hydration Precipitation	Evidence of Dehydration	Evidence of Hydration
2.	2.3	1.8	1.6			
H.D.	1	1	1	Hydration Precipitation	Evidence of Dehydration	Evidence of Dispersion
3.	2.2	1.7	1.5			
F.G.	1	1	1	Hydration Precipitation Rings	Dehydration Some Dispersion	Evidence of Dis- persion, After Adding CO ₂
4	1.9	1.7	1.65			
J.K.	1	1	1	Hydration	Evidence of Dehydration	Evidence of Hydration
5.	1.9	1.8	1.65			
W.R.	1	1	1	Hydration Rings	Some Dispersion Few Rings	Evidence of Dispersion
6.	2.2	1.6	1.6			
C.S.	1	1	1	Dehydration Secondary Hydration	Dehydration	Some Dispersion Some Hydration
7.	2.2	1.8	1.6			
J.S.	1	1	1	Hydration Precipitation	Dehydration Some Dispersion	Evidence of Hydro Dehydration

CO₂ treatment. In Case No. 3, we were able to keep the refractive index down only by adding injections of CO₂ to the vaccine therapy. In Case No. 4, the refractive index was 1.3509 before the treatments; was brought down after CO₂ to 1.3502, and after vaccine therapy went up to 1.3512. The ultra-microscopic picture in this case showed again hydration. Case No. 5 shows the best blood picture and this case did best clinically under the vaccine therapy. In Cases No. 6 and No. 7, the blood came back nearer to the picture of hydration.

Clinically, only one case showed a definite improvement, and one a very slight improvement. The remainder relapsed into the condition observed previous to CO₂ therapy.

Thus far in our limited experience administration of CO₂ seems to offer the more promising field of study as evidenced by the results on the blood colloids shown in the table. Should we give smaller doses and repeat them oftener? Does fever therapy increase the CO₂ of the plasma and tissues and thus correct the alkalosis and hydration percent? More work will be required along those lines before coming to definite conclusions. We hope to follow up this preliminary report with further studies, both of a laboratory and chemical nature.

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REGARDING THE ETIOLOGY OF CHICKENPOX*

AND

HUGH MACDONALD, S. B., M. D.

EDITH J. MACDONALD, R. N.

EVANSTON, ILL.

Steiner¹ in 1875 and d'Heilly and Thoinot² in 1885 demonstrated that the vaccination of susceptible individuals with fresh lymph from chickenpox vesicles produced a local reaction, consisting of a red macula which subsequently went through the stages of vesicle and crust. More recently Kling,³ Handrick,⁴ Rabinoff,⁵ Michael,⁶ Greenthal⁷ and others have shown that vaccination with the fresh lymph not only might

produce a local lesion but also a short period of immunity. Hess and Unger,⁸ in susceptible children, with greatly diluted lymph were unable to produce the disease experimentally: first by the injection of diluted chickenpox vesicle lymph intravenously in 38 cases, intracutaneously in 16, and subcutaneously in 10; and secondly by the application of the diluted lymph on the skin (v. Pirquet method) in 3, in the nostrils in 3, in the mouth in 3, and in the nose and mouth in 4. On the other hand Hotzen,⁹ with undiluted vesicle lymph reported a generalized eruption, resembling clinical chickenpox, in a considerable number of infants after vaccination. This post-vaccination eruption has been recorded by others also. Caronia¹⁰ produced chickenpox in an unexposed child by the injection of blood from a patient early in the disease. Rivers¹¹ and others failed by cutaneous or intravenous inoculations to produce the disease in animals (monkeys, rabbits, guinea pigs, white rats, and chickens).

Bacteriological studies of the blood and vesicle lymph were first reported successful by Auricchio¹² in 1924. He isolated from the blood and vesicle lymph of 20 cases (using Tarozzi-Noguchi anaerobic medium) a small coccus which occurred singly or in pairs and stained gram positive. This organism was transplanted repeatedly in this medium but failed to grow in the more common mediums. Identical bodies were observed by him in smear preparations made directly from the fresh vesicles. In the blood serum of convalescents he demonstrated constantly the presence of complement fixing bodies.

We wish to report the results of work with the microorganism of chickenpox, results of human inoculations, and an attempt to fulfill Koch's postulates. A micrococcus was found constantly in smear preparations from early intact vesicles and of blood in 7 successive cases. It was spherical and occurred singly, occasionally as a diplococcus, but apparently never in chains or clusters. It measured 0.5 microns in diameter and was non-motile. It stained with the common stains and was gram positive. By Loeffler's method† one to four—usually one—flagellae were present. Encapsulation was not demonstrable. It grew feebly in a liquid medium consisting of Bacto veal infusion both en-

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riched with 1% proteose peptone, aerobically and anaerobically, incubating at 37 C. The growth was determined microscopically by the numerical increase of the organisms (bacterial-count-method), rather than by the gross appearance of increasing turbidity of the medium. Three to 4 weeks of cultivation were required before much growth was apparent. Cul-

growth took place. No gas formation was observed in the following sugar mediums: dextrose, levulose, galactose, mannite, maltose, lactose, sucrose, dextrin, inulin and salicin (Dr. J. Lyle Williams). A small portion of the microorganisms passed through a tested Berkefeld filter W (fine), the bulk being retained by the filter. The microorganism, for which we suggest the name *Micrococcus varicellae*, was present in but small numbers in intact early vesicles; more abundant in vesicles secondarily infected.

To rule out any untoward results in later inoculation experiments, the living culture to be used was first tested out by an intra-cutaneous injection into an immune adult. No local or general reaction occurred during 25 days of observation. For the inoculation experiment 4 children (ages 20 mos., 3 yrs., 3 yrs., and 4.5 yrs. respectively) were employed, with the full consent and cooperation of their parents. While these children were not quarantined previous to the experiment, infection from natural sources was felt to be unlikely because they lived in a sparsely settled locality, came in contact with but few persons and these persons were for the most part also susceptible and remained free of the disease. Each child was given 3 drops of a 5 months old dextrose peptone broth culture by mouth. This culture was the first subculture of one obtained from blood. One of the children (age 20 mos.) was simultaneously injected subcutaneously with 1 cc. of the same culture, previously mixed with phenol (1%), heated at 60 C. for 10 min. and at 37 C. for 24 hrs. Immediately following the inoculations no signs of local inflammation or febrile reaction were observed. But on the 18th day after the inoculations the child (age 20 mos.) Fig. 1., who had had also the subcutaneous injection of heated phenolated culture, developed a typical chickenpox eruption with fever of 5 days duration. Similar eruptions occurred in the other 3 children on the 31st, 32nd and 34th days respectively. In all these children the smear preparations of intact vesicles and the cultures from intact vesicles and the blood showed morphologically and culturally the same organism as the one given originally by mouth. Complement fixation tests were made (Dr. J. Lyle Williams) on the blood during convalescence of 2 of these children (20



Fig. 1. Photograph of child 20 mos. old on the 4th day of chickenpox eruption.

tures from the blood grew much better than those from the vesicle lymph. The organism grew slowly on blood agar plates in pure culture, appearing in 5 to 7 days as minute colorless, transparent elevations with regular margins. However, when other bacteria were added to the broth or plate cultures more abundant

†Staining with warm, freshly filtered Loeffler's flagella stain for several minutes, washing with acid alcohol and restaining with Giemsa's stain for 10-15 minutes gave especially satisfactory results.

mos. and 4.5 yrs. respectively). In these tests the uncentrifugalized cultures from vesicle lymph (consisting of 4% dextrose, 1.5% peptone and water) were used as antigen. The results were as follows: Convalescent serum and undiluted antigen, 100% fixation with 0.3 cc., 75% with 0.2 cc., and 25% with 0.1 cc. Convalescent serum with antigen diluted 1 to 10 with physiological salt solution: clearly negative with 1 cc., 0.5 cc., 0.2 cc., and 0.1 cc. With non-immune blood serum and undiluted antigen: clearly negative with 0.3 cc., 0.2 cc., and 0.1 cc. of antigen. Undiluted antigen without serum: clearly negative with 0.3 cc., 0.2 cc., and 0.1 cc. of antigen.

COMMENT:

The culture used for oral administration had been growing in the same tube for 5 months. The failure of 3 of the 4 children to contract chickenpox in the usual incubation period suggests that the microorganism, although living, was attenuated. The positive infection in the child receiving the subcutaneous inoculation of heated phenolated culture corresponds with the results obtained by Gordon¹³ working with the smallpox virus. He reported that rabbits inoculated subcutaneously with a suspension of smallpox virus killed with phenol were later more susceptible to skin inoculations with the cowpox virus than normal rabbits or rabbits receiving the subcutaneous injection of smallpox virus but without phenol.

SUMMARY AND CONCLUSIONS:

Confirmatory to the report of Auricchio¹² a microorganism, (*Micrococcus varicellae*), was found in smear preparations of intact vesicle lymph and successfully grown in pure cultures from the vesicles and blood of 7 successive cases of chickenpox. The authors report the successful production of chickenpox in one child on the 18th day after oral administration of a pure culture. A morphologically and culturally similar micrococcus was regained from this patient's vesicles and blood. Complement fixation tests on convalescent blood, using the micrococcus as antigen, were positive.

While the possibility of the presence of an additional and invisible virus in the medium was not eliminated, it appears reasonable to be-

lieve that the organism described is pathogenic and the causative bacterium of chickenpox.

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Foot Note: The authors are indebted to Dr. J. Lyle Williams and his associates in the Laboratory of the Evanston Hospital for performing the bacteriologic studies on the various sugars and making the complement fixation tests.

636 Church St.

UNDULANT FEVER* (THE MIMIC DISEASE)

R. O. STITES, M. D.

INDUSTRY, ILL.

Early in the fall of 1929, I attended the Fulton County Medical Society Meeting, at which Dr. E. E. Davis of Avon, reported a case of undulant fever. He explained that in a September issue of the *Journal, A. M. A.* an article was published on this disease. He gave extracts from this article and I became extremely interested because for the past nine or ten years I had seen cases of this and many other types which did not fit anything I had ever been taught or could find in the literature available.

Dr. Davis said that at that time a case of his had been puzzling him, as the symptoms did not fit any definite entity, but he thought his patient might have T. B. He drew off some blood, and to his surprise the laboratory diagnosis was undulant fever.

I could not wait to shake Dr. Davis' hand and tell him that this was the most interesting article that I had heard at any meeting I had ever attended. I read this article in the September issue of the *Journal, A. M. A.* over and over again.

The description of this disease fits certain

*Read before Section on Public Health and Hygiene, Illinois State Medical Society, May 7, 1931, East St. Louis.

atypical cases that I had attended during the past 9 or 10 years.

About a month later I had my first case of undulant fever. In the middle of the night I was called to see:

Case 1. Florence H. Aged 38 years.

She had a temperature of 104, was sitting up in bed grasping her left breast and saying "that she was going to die," and, frankly, to myself I agreed with her. She acted like a syphilitic aortitis, but had no heart murmur, and her temperature of 104 did not fit such a diagnosis. The next day she was markedly tender over the gall bladder region. I then thought she had a gall bladder infection, with toxic manifestations. In a few days this proved false. She then began to sweat and her temperature ran in waves. I drew off some of her blood and the laboratory diagnosis was undulant fever.

Case 2. Keith H. Aged 6 years.

Ten days later this lady's son began to run a temperature and he laid around on the couch. Physical examination was negative except a large spleen and fever. The laboratory gave a positive report for undulant fever.

Case 3. Aaron H. Aged 13 years.

About a month later, another son was brought to my office, with a severe abdominal pain. Examination was otherwise negative. It took $\frac{1}{2}$ grain of morphine hypodermically to relieve him, so he could return home. I told the father that if his son's "belly" was tight or tender in certain places, I would refer his boy to a surgeon.

The next day the boy was returned to my office with a pain more severe than the day before. Again a $\frac{1}{4}$ grain of morphine was given without relief. After two or three hours waiting I gave him morphine $\frac{1}{8}$ grain, hyocine 1/300 grain and prompt relief of pain resulted. I told the father that the boy's symptoms did not warrant a diagnosis of appendicitis or kidney stone and I did not know to what his pain was due. The father suggested that the boy might have developed the same condition that his mother and younger brother had, but I knew better, since the boy had no temperature, no enlarged spleen, no sweats, etc. The father asked why I was so sure, since I had told him I did not know anything about undulant fever and no one else knew much more. I agreed to submit a sample of his blood, which proved to be positive to undulant fever agglutination. We must admit that these farmers have sound reasoning.

For the next 16 months, I drew blood from puzzling cases from time to time but all were negative, and I would promptly dismiss undulant as a possibility.

On February 27, 1931, Clarence B., a father of four children, called me from Macomb and requested that I go to his home, take plenty of time and look his family over and see what was wrong with them. He stated that they had all been sick for the past two months.

The father and mother told me about their two

months' illness. I questioned the father about their cows. They had only one and it had been necessary for the veterinarian to remove the placenta at her last calving time, and she had been in heat ever since. A three-year-old heifer was also in heat all the time and would not become with calf. I asked him to have a veterinarian draw blood from the cow and I drew blood from the entire family, except a two-year-old baby girl.

The laboratory report was Bang's disease in the cow and undulant fever in:

Case 4. Elaine B. Aged 16 years. Daughter of Clarence B.

She had been nervous and irritable for three months, had some joint stiffness, lost seven pounds in weight, but was feeling better again at that particular time. Examination proved negative with the exception of an enlarged spleen.

I immediately wrote to the Health Department, stating that in my opinion if Elaine B. was undulant, all three other children of Clarence B. also were undulant. Dr. McShane and Dr. Shaughnessy answered with extremely helpful letters, explaining that from the history of the cases, and since the family cow was a reactor, there was a strong possibility that the other three children also had undulant fever, and that it required about 28 days after the onset of the disease to obtain a positive agglutination test. They also requested additional specimens from the entire family at a later date, with which I complied. The report showed two of the four specimens to be positive and two were hemolyzed.

Case 5. Gertrude B. Aged 38 years; wife of Clarence B.

Her only symptoms were fatigue, sore joints and nervousness. She complained of the children driving her to distraction, which they had never done before.

Case 6. Howard B. Aged 13 years; son of Clarence B.

Had what has been called "flu" by the public and many physicians since 1918-1919, but which I personally have called the "prevailing sickness," as I did not know what it was, but did not believe it to be influenza in many of the cases. The boy's illness began apparently with a cold, pain in the abdomen, followed by jaundice, obstinate constipation, loss of weight and a cough that persisted with no lung findings to account for it.

Case 7. Genevieve C.; aged 28 years.

I was called to see her in the middle of the night. She had a temperature of 104, and complained of severe pain around the heart. One-half grain of morphine only partially relieved her in four hours. Six hours later a $\frac{1}{4}$ grain of morphine was given with only partial relief. Sixteen hours later a H. M. C. was given and relieved all pain. The heart was normal, and I could find nothing to explain this severe pain and high fever. Up until then I thought her a beginning lobar pneumonia.

The next morning she was so tender over the whole left chest that she could not stand to be touched. I then told the family it was a neuritis in the chest wall,

but no neuritis that I knew about would be that severe, except herpes zoster and with that she would break out locally with a rash. In a few days a few red spots appeared on the chest, abdomen and back, but they looked like rose spots of typhoid fever. To my utter surprise a test for undulant fever was positive.

I then wrote to the Health Department, giving case histories of most of my undulant fever patients and requested information concerning the disease. I was instructed to write to the Superintendent of Documents, Washington, D. C., for Bulletin No. 158, issued by the National Institute of Health of the U. S. Treasury Department, which I did. About a month later the bulletin came. For the next week I read and re-read this bulletin and found case reports fitting practically all cases that had worried me during the past nine or ten years. I began to call in these loyal, faithful patients who had searched for their health, and began to send blood to the State Laboratory for undulant fever agglutination tests.

Since then, by carefully selecting these cases, I have twenty-one additional positive undulant cases. That is, twenty-eight in all.

From November 2, 1929, until May 4, 1931, inclusive, 95 specimens of blood and milk have been submitted for the undulant fever test, with the following results:

6 were negative repeats.

1 positive report was on a Jersey cow.

7 negative reports were on cow's milk.

8 specimens of blood were hemolyzed in transit.

1 specimen was not of sufficient quantity.

1 specimen container was broken in transit, leaving a balance of 28 positive reports out of 71 human suspects.

It is a mimic disease, but like all mimics it lacks one or two of the essential characteristics of the real entities with which it may be confused. I found it mimicking and masquerading:

Gall bladder disease, pulmonary T. B., T. B. of the kidney, acute appendicitis, arthritis, acute rheumatic fever, chorea, stomach ulcer, non-specific vaginitis, pyelitis, so-called chronic "flu," myasthenia gravis, herpes zoster, cancer of the cervix and our old friend, neurasthenia.

If the undulant agglutination test has any value, and if these cases actually have now or have had undulant fever in the past, and if this disease is as generally prevailing as it is locally, the task of cleaning up the domestic animals who apparently harbor this disease and transmit

it to mankind, will outrival that of cleaning out the swamps in the Canal Zone by General Goethals.

A great step awaits us in preventive medicine, unless this undulant fever agglutination test can be discredited.

DISCUSSION

Dr. H. S. Houston, Springfield, Ill.: I have enjoyed listening to Dr. Stites' paper, and I believe that it gives a pretty clear picture of the disease as it is met with in practice. Our own Division has compiled brief reports on a number of cases which have been brought to our attention, and I am in possession of a few figures obtained from the State Department of Vital Statistics from whose records I was able to get some information with regard to undulant fever deaths during the past five years. In 1930 there were 63 cases reported and 6 deaths; in 1929, 37 cases with 2 deaths; in 1928, 26 cases with no deaths; in 1927, 5 cases with no deaths. For the year 1926 we received no reports of either cases or deaths. These figures, of course, are not an accurate index to the real undulant fever situation in this state inasmuch as a number of cases, so diagnosed, were not reported, and it is likely also that a considerable number of cases have not been recognized. There is one thing, however, that we can learn from this information and that is, that in the past two or three years some progress has been made in the recognition and control of undulant fever. The question naturally arises with regard to handling the situation now that we are beginning to get some information about it. So far, the only measures available seem to be those of a prophylactic nature, emphasis being placed upon the removal of sources of infection and the pasteurization of milk supplies. Milk from infected herds should necessarily be pasteurized and I am wondering whether it would not be more profitable, in the long run, to eliminate infected animals because of the fact that they become economically unprofitable anyway.

The death rate from undulant fever, according to the available information that we have, does not amount to a great deal, approximately less than two per cent. The chief difficulty is the long period of debilitation of the patient, and therein lies the importance of this disease as an economic and public health problem.

Symptoms of the disease are fairly clear but added to undulant fever symptoms are those of several other conditions. Fever is perhaps the most constant and most variable. Of course, here as well as in other diseases involving infectious organisms, there is a definite bacteremia and patients develop septic symptoms. While we can not describe a text-book picture of undulant fever we may say that the temperature curves seem to adopt a rather typical pattern. Following the onset of the disease and particularly after the temperature begins to rise there seems to be a step-like gradation from one day to the next. The high point and low

point on a given day being slightly higher than they were on the day before with perhaps a slight remission in the morning. This may continue until a temperature of 103 or 104 is reached and then the temperature begins to recede in a like manner, going down a little bit day by day and each day the high point and low point being slightly lower than the day before. A given case seems to show individually a more or less definite interval between these exacerbations in temperature and other symptoms. Some cases will show a regular course with intervals anywhere from three or four days up to perhaps several weeks between periods of temperature elevation. Those infected with the melitensis type of organism seem to exhibit a somewhat longer interval between the undulations of temperature, and other symptoms. Cases infected with the bovine and porcine type seem to run very similar courses. My point is that in a given case once the temperature curve is established it seems to follow the same pattern pretty well throughout the course of the disease.

Chills and sweats are very closely associated, naturally, with the temperature manifestations. Sweats are extremely profuse in many cases, however, they are variable. The onset of chills seems to vary with the changes in temperature which may occur. I have had occasion to see a few cases that complain of severe headache and backache, especially at the onset. I don't believe that that is a constant symptom and I wonder whether Dr. Stites has observed it in the cases which he has attended. Pain in the joints and other symptoms of arthritis along with neuritis seem to be rather constant, and the evidence indicates that neuritis in the majority of cases is probably responsible for the joint manifestations. Depression, irritability, variable neuroses and definite psychic manifestations have been found along with other functional nervous disorders.

In rural districts there seems to be a slightly greater number of cases in women than in men. I do not know whether that can be borne out in a large number of cases but the information available indicates that it is true. Perhaps women, at least in the rural districts, are exposed to infection more often through handling milk than are men.

Inasmuch as this disease is fundamentally a cause of abortion, at least in the lower animals, I am wondering how many positive agglutination tests we would get in the routine examination of blood specimens from women complaining of sterility. There are a certain number of such patients, examination of whom does not show any plausible explanation for sterility. Agglutination tests of these would be of interest. Another question arises with regard to the role taken by the endocrine system in case of undulant fever. Occasionally mild ambulatory cases of undulant fever show symptoms somewhat similar to those of hypothyroidism, and low basal metabolic rates have been found in a few. I am wondering whether studies in basal metabolism might throw a little light on the subject.

Organs that seem to be particularly involved include the spleen, kidneys and liver. I believe organisms have been recovered also from lymph glands.

Treatment of the disease must assume a symptomatic nature. While the disease frequently runs a very long course it seems to be rather self-limited after all, and treatment is governed to a great extent by the individual symptoms as they arise. Some investigators seem to feel that favorable results have been obtained from the use of bacterial vaccine and results of such treatment seem definitely encouraging. The vaccine preparations which are available are slightly variable as to their content of dead organisms, usually varying between two billion and six billion per cubic centimeter. Results indicate that vaccine is likely to be of most value if it is given when the temperature curve is on the rise. Treatment with aniline dyes intravenously has been tried, and the solutions used mostly are mercurochrome and acriflavine. Results indicate that solutions strong enough to be effective can not be safely administered on account of their toxicity to the patient, and there is also the possibility that such doses would be sufficiently diluted in the blood stream to become ineffective.

You may wonder why there have been so many cases showing positive tests around Industry and not in other communities. Physicians in that particular community are especially interested and are submitting blood specimens from selected cases as suspects, and it may be that members of the profession generally are not on the lookout for possible cases as much as they seem to be in this particular locality in question. At any rate there seems to be two possibilities, either the agglutination test may give positive results for other things besides undulant fever, or there are many cases of undulant fever in this State that no one knows anything about, and I am afraid that the latter is true. Doctor Stites describes the condition as a "mimic disease" and I think that describes it very well. What few cases I have seen have shown a few rather typical symptoms, but in addition they have presented symptoms typical of other conditions but important things are usually lacking which would enable one to make a diagnosis of other conditions.

Dr. Arlington Ailes, LaSalle: Is it possible, Dr. Houston, that you might have had an epidemic of undulant fever around Industry?

Dr. Houston: That is probable, at least remotely. I think infected herds are perhaps more numerous in some communities than in others and while I think the majority of cases are infected from the milk or infected cattle it is definitely shown that there are other sources of infection. This is borne out by the fact that undulant fever cases among employees of packing houses are not uncommon and I believe that it is in such places that many of the porcine types of infection occur.

There was one other thing bearing on the matter of vaccination which is of interest and which I neglected to mention. I have been informed that approximately 50 per cent. of the veterinarians in this State give positive agglutination tests for undulant fever though very few of them have shown any definite symptoms of the disease. This would certainly indicate that an immunity is possible, and they are indeed in a position to

build active immunity through contact with organisms. This, to me, indicates that active immunity is possible through vaccine therapy and I do not believe that the time is far distant when the results from the use of vaccine will be safe and sure.

Dr. W. W. Kuntz, Barry, Illinois: I should like to ask Dr. Stites if he had any of his positive cases re-checked by the laboratory; and do I understand Dr. McLaughlin that the University of Iowa checked some of their positive cases?

In a case that I suspected might be undulant fever I sent a blood test and got a positive return. Not still quite satisfied it was re-checked with a subsequent test, and one at the National Public Health laboratory. They both came back negative.

Dr. H. J. Shaughnessy: Dr. Houston passed a great deal of the responsibility for the diagnosis of these cases to the laboratory test. I do not think he can be blamed for that because in the words of the writer in the Government Bulletin 153, to which you have already been referred, "undulant fever is an infection having neither a pathognomonic symptom nor sign." In almost every other condition the clinician relies only to a certain extent upon the laboratory test. His clinical findings are usually so well marked that the laboratory diagnosis is only an adjunct to his findings. In this case, however, where he has great difficulty in making a differential diagnosis, the laboratory test is more important than usual. For this reason, something in regard to the significance of the test ought to be mentioned. In the first place, I think we can say that from the technical standpoint we are willing to stand by the test. We have had it performed by two different individuals, reading them separately with good agreement. The work reported here dealing with the cases in the University of Iowa showed that with check tests made between the Iowa State Laboratory and the National Institute of Health, they agreed in practically all cases.

Dr. Houston has raised an important point, I think in asking "What is the significance of a positive test?" and that until some more marked symptom of the disease is known, will probably not be possible to answer. We can say this, I think, at present, however: First, the test may indicate remote infection as well as the present infection. That always is to be remembered. Probably it is not so important because the evidence to date indicates that the agglutination titre in these cases run down very rapidly and does not remain high for more than a year at the most.

Then the test is sometimes negative even when the infection is known to be present by the finding of organisms in the blood stream. That happens, of course, even in typhoid. The Widal test is only ninety per cent. accurate under the best conditions and I do not think we will ever find this test is more accurate than that. Probably it will be less accurate for some time.

Finally, the third question, the possibility that other disease may affect the agglutination test is one that has given us a good deal of worry, and I think we can frankly say that that does happen. We find individuals suffering from febrile conditions due to other

causes showing a positive agglutination test, in typhoid fever. That phenomenon has been discovered in our own laboratory and in the New York State laboratories and we find it probably happens in the case of undulant fever. I have recently talked to Dr. Robert Graham, head of the animal pathology division at the University of Illinois, who is doing this test on cattle, and he says that his results indicate that they get a positive agglutination test for undulant fever with other diseases occasionally, so that we must look out for it.

Finally, I would like to say this, that Dr. Stites' cases would indicate in themselves to a certain degree that the test is reliable perhaps in three-fourths of the cases, or something of that kind. You remember that he stated that he had a couple of positives in 1929 and then for sixteen months, when he was not looking for them especially, all of the tests were negative, then when he began to select his cases carefully the percentage of positives became much higher. I do not think it would be possible that anyone could just go out and take blood indiscriminately and show 28 positive cases out of 71 persons examined. We hope at least you will not do that because you will inevitably believe that the laboratory test is not reliable under those conditions.

Dr. R. O. Stites (in closing): I have not checked up on the Laboratory reports. I went to Springfield at 8 A. M. one Sunday morning and called Drs. Huston and Shaughnessy out of bed. By talking to them I personally am sure any check on their work would find them with a "Royal Flush" and not any "Bobtail Straights." I cannot answer any questions concerning this disease. My paper is just a story, not a scientific paper. It is a story grown out of 10 years of dissatisfaction with mystifying results in the practice of medical art.

I sincerely believe undulant fever (the Mimic) is the answer to a vast amount of unfavorable results when I had given a good prognosis and favorable results when I had given a grave prognosis. I will stick to my story.

THE BLOOD CHEMISTRY, TOXEMIA AND MECHANICS OF ADVANCED INTESTINAL OBSTRUCTION, WITH DEDUCTIONS ON TREATMENT*

W. D. GATCH, M. D.

INDIANAPOLIS, IND.

Of late years great progress has been made in the scientific study of intestinal obstruction. Research has been chiefly on the changes in blood chemistry, and on the nature and origin of the toxemia observed in certain cases. Study of the mechanics of intestinal occlusion has been

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relatively neglected, although this is a factor equal in importance to deranged blood chemistry and toxemia. On this I shall present some personal observations.

Despite the increase in our knowledge of intestinal obstruction, the death rate therefrom, except for cases of brief duration, still remains very high. There is a widespread opinion that, in the management, early diagnosis is about all that matters. This attitude is liable to make the physician take a complacent, and therefore dangerous, attitude toward the fate of late cases. While the importance of early diagnosis is very great, we have to recognize that for a long time to come we must continue to treat advanced cases. I shall therefore try to apply our present scientific knowledge to the management of these, for whom, I think, it offers increased hope of survival.

The limits of a single paper compel me to present my subject in outline form. I cannot review the vast literature or give credit to all the workers, whose painstaking research has built up our knowledge.

1. The Two Kinds of Intestinal Obstruction. Foster and Hausler,¹ and Trusler and the writer,² independently arrived at the conclusion that there are two distinct kinds of intestinal obstruction. These are 1. Simple obstruction, in which there is no gangrene of the bowel, and 2. Strangulation, which is obstruction plus gangrene of the bowel.³ We came to recognize these two groups because experimentally we were unable to produce in the dog an obstruction which would remain for more than a day or two uncomplicated by gangrene, except at a point not far from the pylorus, or in the colon. The technique we used was division of the bowel and invagination of the severed ends. Elsewhere in the small intestine we almost invariably observed the early development of gangrene at the site of obstruction. It is to be noted that we were studying bowel obstruction uncomplicated by interference with the mesenteric circulation. *

We therefore studied why gangrene did not occur at or near the pylorus and in the colon, and why it occurred throughout the great length of the small intestine. We found the explanation in the effect upon the circulation of the

bowel of distention due to gas or fluid. Suffice it to say that we were able to measure the blood flow through a loop of bowel subjected to various degrees of inflation, and to show that the flow decreases as the distention increases, and ceases when the pressure within the bowel equals the systolic blood pressure. This result has been confirmed and amplified by Dragstedt, Long and Millet,⁴ who have shown that distention causes the greatest interference with the circulation of the duodenum, and the least with that of the colon. They explain this, in all probability correctly, as correlated with a variation in the distribution of the blood vessels in the wall of the intestine.

It may be objected that intra-intestinal pressures as great as we used in this experiment do not occur under clinical conditions in the human intestine. The answer to this is that they do, as every surgeon who has performed enterostomy for obstruction can testify. I have often seen the small intestine distended to a diameter of two inches or more and almost white in color. On releasing the pressure I have always observed that the bowel took on a bright red color. In this connection it is of interest to note that Kocher⁵ in 1898 observed ulceration and perforation of distended loops of bowel at the mesenteric border.

In the effect of distention on the circulation of the bowel we therefore had the explanation of why, in our experiments, simple obstruction occurred at or near the pylorus and in the colon, and why strangulation occurred in the small bowel. At or near the pylorus the distention is relieved by regurgitation into the stomach. In the colon the distention is well tolerated by the ability of the colon to expand, by its power to absorb water, and by its blood supply, which is not so much impeded by distention. In the jejunum and ileum, however, because of the trapping of the fluid or gas, the distention quickly leads to gangrene.

It is important to note that the foregoing conclusions hold good for obstruction due to a localized peritonitis involving a portion of the intestine.

This associated with distention of the bowel, may cause a complete obstruction. In fact this is probably the commonest cause of intestinal obstruction. If the terminal ileum is so af-

3. Wilkie deserves credit for first making this classification (1913) though his conclusions remained unheeded.

fects, as it often is in advanced appendicitis, it is totally paralyzed and will be distended gradually by gas and fluid. The distention will spread till more and more intestine is involved. Gangrene of the bowel and general peritonitis then ensue. We shall return to this matter later.

So far we have shown that there are two kinds of advanced intestinal obstruction depending upon the presence or absence of gangrene of the bowel. We have pointed out that in the experimental animal obstruction produced without interference with the blood supply of the bowel will remain uncomplicated by gangrene (simple obstruction) in two places only, namely, at or near the pylorus, and in the colon. We have accounted for this localization of simple obstruction as observed in our experiments, by the absence of the effect of distention on the circulation of the bowel wall. Clinical observation shows that this distribution of advanced simple obstruction is found also in man.

Certain corollaries to this conclusion should be pointed out. Simple advanced ileus, the sigmoid excepted, occurs chiefly in portions of intestine devoid of a mesentery. It is caused clinically almost entirely by obstruction from ulcer or cancer. These conditions are practically limited to the duodenum, pylorus and colon. Portions of bowel devoid of a mesentery are not liable to interference with their extramural blood supply, since they are not affected by the two chief causes of such interference, volvulus and incarceration. Distention of the small bowel may cause gangrene of the bowel above the site of any obstruction, no matter how produced. It is evident that all early obstructions are simple, also that the dangers of strangulation are equal to those of simple obstruction plus the additional dangers due to the gangrene.

A failure to recognize the fact that there are two kinds of intestinal obstruction, has led to endless confusion of thought, great waste of effort in experimental study, and poor clinical results.

THE SYSTEMIC EFFECTS AND BLOOD CHEMISTRY OF INTESTINAL OBSTRUCTION

The systemic effects of intestinal obstruction have till recently been attributed by nearly all observers to toxemia. Within the last few years, however, overwhelming evidence has been pro-

duced by many observers to show that in simple high obstruction, and by this I mean obstruction at or near the pylorus, death is due to a metabolic disturbance. Since the establishment of this fact marks a great advance in our knowledge of intestinal obstruction, I shall briefly review its history.

Hartwell, Hoguet and Beckman⁶ in 1912 were first to call attention to the beneficial effects of salt solution in intestinal obstruction. They attributed this action to the relief of dehydration. McCallum⁷ in 1920 explained the relation of pyloric obstruction to gastric tetany. He was first to show that in pyloric obstruction there is an alkalosis due to loss of chlorine ions. In 1923 Haden and Orr⁸ attributed the beneficial results of salt solution to a neutralization of a hypothetical toxine by chlorine ions. These writers now admit that this neutralization theory is untenable. It had, however, the great merit of stimulating much experimental work, which has finally led to a complete demonstration that there is no absorption of a toxine in high simple obstruction, and that the causes of death therefrom are dehydration, alkalosis and starvation.

The writer and Dr. H. M. Trusler⁹ showed that the fall in body chlorides can be accounted for by the chlorides lost by vomiting, in the urine and in the intestinal contents. Brooks¹⁰ showed that sodium chloride was powerless to prevent the effects of the toxin obtained from obstructed loops of bowel. Foster and Hausler¹ demonstrated that a dog with simple obstruction can be kept alive for weeks without either water or food if he is tided over the critical period immediately after operation by the administration of salt solution.

White and Fender¹¹ showed that a dog with high obstruction can be kept alive and in good condition indefinitely if his vomitus is collected and injected into the bowel below the obstruction. This result is inconceivable on the assumption that the vomitus is toxic.

The Blood Chemistry. The changes in blood chemistry which are found in high simple intestinal obstruction may be summarized as follows:

1. There is a fall in the blood chlorides which causes an alkalosis. When the chloride level reaches 300 mgm. tetany is liable to develop. The fall in the chlorides is due to the loss of

chlorine ions into the gastro-intestinal tract. The basic ions (sodium) remain in the blood and produce an alkalosis as shown by the increased carbon-dioxide combining power of the blood. McIver and Gamble,¹² while stating that an alkalosis is the usual finding, point out that in some cases an acidosis is met with. This occurs when there is a preponderance of bile and pancreatic secretion in the vomitus. In the gastric juice the acid ions are to a great degree not bound to fixed basic ions. A constant loss from the body of gastric juice, therefore depletes the blood of acid ions. In the bile and pancreatic juice, on the contrary, the acid ions are for the most part bound to fixed basic ions (chiefly sodium). Loss of this secretion, therefore, causes an acidosis. It is evident that with obstruction above the ampulla of Vater, alkalosis will occur, unless there is achlorhydria.

2. There is marked dehydration, caused essentially by the loss of electrolytes from the blood. It is a matter of great importance to note that this dehydration cannot be relieved by giving water alone. Sodium chloride must be given with the water before the body can retain the water. We have shown that dogs with high obstruction die much sooner when given water freely than when deprived of it.

Dehydration causes a marked concentration of the blood, with a great increase in its viscosity. This evidently interferes with the ability of the blood to carry food and oxygen to the tissues, and to remove waste products from them.

3. There is an increase of nitrogenous waste products in the blood. Trusler and I⁹ have shown that this increase does not occur if the experimental animal is given adequate quantities of salt solution. This maintains a normal excretion of urine whereby the nitrogenous wastes are eliminated. It is probable that with alkalosis and dehydration there is a breaking down of tissue, which augments the quantity of these waste products in the blood. But there is no reason to think that they are caused by the absorption of a toxin. The same changes in blood chemistry can be observed after the vomiting caused by ligation of both ureters. It is stated that they occur also after profuse and prolonged sweating. In the second location of simple obstruction, namely the colon, no noteworthy changes in blood chemistry occur. This

is because vomiting is not severe, and because the colon can easily absorb water from its contents.

The blood chemistry in cases of intestinal strangulation differs but little from that observed in cases of simple obstruction, except that, because of the brief duration of life, the changes are likely to be less marked. Either an alkalosis or an acidosis may be observed depending upon whether the fluid lost into the bowel or by vomiting is predominately of gastric or of duodenal origin. In either case there is dehydration and retention of nitrogenous waste products.

THE TOXEMIA OF INTESTINAL STRANGULATION

Many observers have shown that the stagnant contents of obstructed bowel are strongly toxic. We must consider the origin of this toxicity, the nature of the toxin or toxins found, and the conditions of their absorption.

On the origin of the toxins there have been three theories: 1. That they are produced by a perverted activity of the intestinal epithelium, 2. That they are formed by the action of ferments, chiefly pancreatic, on proteins present in the bowel, 3. That they are products of bacterial action in the stagnant bowel contents. A detailed discussion of these theories would lead us too far afield. Suffice it to say that the majority of writers believe that the third theory has been established by the work of Murphy and Brooks¹⁰ and of Dragstedt, Moorehead and Burcky.¹⁴ The latter workers showed that when an isolated open loop of jejunum has become sterile by prolonged drainage into the peritoneal cavity, it may be closed, and will then cause no toxic symptoms, even though it became gangrenous.

We have but little knowledge of the chemical nature of this toxic material. Brooks¹⁰ with much reason believes that its composition varies with the bacterial flora and bowel content. Dragstedt,¹³ thinks it is a product of the action of intestinal bacteria on proteins or their split products. Other writers think it may be composed of histamine-like substances. Injected intravenously or intra-peritoneally the toxic material obtained from obstructed loops causes vomiting, bloody diarrhea, muscular weakness, circulatory collapse and death. The suggestion that the toxemia of ileus is due to the toxins of the Welch bacillus¹⁴

has been disproved. No one has been able to produce an immunity to the toxic material.

The Absorption of the Toxic Material. This is a matter of even greater importance than the formation of the poison or its chemical nature. It has been generally assumed that absorption is by way of the mesenteric lymph or blood vessels, though some writers have discussed the possibility of transperitoneal absorption. I became interested in this matter while studying the effects of distention on the bowel wall, and performed the following experiments.

A ligature is tied about the small intestine, and at a point one to two feet from this ligature the bowel is cut across and a glass canula is introduced and tied in place so that a segment of bowel is isolated between the canula and the ligature. The canula is connected with a pressure apparatus. The blood pressure is recorded. With the segment of bowel outside the abdomen the pressure within it is now elevated till it equals the systolic pressure of the animal. As we have already explained this produces a complete anemia of the bowel. We now introduce into the bowel a large dose of nicotine or potassium cyanide. Next we gradually lower the pressure within the bowel. There is no sign of absorption of the poison till the pressure reaches about half the systolic blood pressure. At this degree of pressure there is a rapid absorption of the poison, clearly shown by a sudden and great elevation of blood pressure, if nicotine is used, and by a great increase in respiration if potassium cyanide is used. If now the same experiment is repeated except that the bowel, distended to the height of the systolic pressure, is replaced within the abdomen, the animal shows immediate signs of absorption. Thus while distention of the bowel prevents or diminishes direct absorption into the blood stream, it probably increases absorption by way of the peritoneum, because diffusion can take place more readily through a thin and damaged bowel wall than through a bowel wall uninjured and of normal thickness. By this method it can be shown that absorption from the intestine varies inversely as distention of the intestine, or, stated in other terms, the absorption decreases as the circulation through the bowel decreases, till with the onset of gangrene all absorption must be transperitoneal. From an incarcerated loop or from any loop, the mesen-

teric vessels of which are obstructed, the absorption must be transperitoneal from the very onset, because here the mesenteric veins of the loop are obstructed very soon. From the free bowel above the site of obstruction the absorption by way of the mesentery will decrease as the distention of the bowel increases. Since observers are pretty well agreed that the toxins from the obstructed bowel are but slowly absorbed through an intact mucosa, and since injury of the mucosa does not occur till a rather high degree of distention has been reached, which would interfere with the circulation of the bowel wall, it follows that the chief route of absorption must be transperitoneal and that the chief absorption of toxins in intestinal obstruction occurs rather late in the course of the disease, after well marked distention of the bowel has occurred.

It may be objected that the toxic material formed in intestinal obstruction might not pass through the bowel as does nicotine or potassium iodide. Stone and Firor,¹⁵ however, have shown that when the contents of obstructed bowel are placed in a closed loop of intestine and the latter inflated with air and placed in Ringer's solution, the toxic material can be demonstrated in the Ringer's solution.

There is a widespread opinion that when an obstruction is relieved the patient may be killed by the absorption of toxic material entering the collapsed bowel from above. This idea is supported by the observation of death, apparently due to toxemia, soon after the relief of the obstruction. Now absorption of toxins through an intact intestinal mucosa is slight. We have just shown that with the decrease in the pressure of a distended bowel, absorption through its mesenteric vessels can occur. Therefore, any absorption of toxins, other than transperitoneal absorption, occurring after the relief of obstruction, must be from the bowel above the site of obstruction. I believe that the foregoing experiments show that there is danger from the too sudden relief of intra-intestinal pressure above an obstruction, and think that I have seen clinical proof of this. It is of interest to note that Murphy¹⁰ advocated resection of all damaged bowel to prevent absorption of toxins.

TREATMENT

From the foregoing discussion it is evident that the treatment of simple obstruction is ex-

tremely hopeful even in late cases and comparatively easy, and that the treatment of strangulation of the bowel is the reverse. Both types of obstruction produce a profound systemic disturbance. This, in the case of simple obstruction, is due to a deranged metabolism, plus a profound toxemia. In the treatment of simple obstruction we can correct the faulty metabolism and then relieve the obstruction safely, and even wait in many cases till we see fit to do so. In the treatment of strangulation the correction of the faulty metabolism constitutes but a small part of the cure. Here it is well to state that every patient with intestinal obstruction, or who is suspected of having intestinal obstruction, should be given normal salt solution intravenously to restore his blood chlorides to a normal level, and to relieve dehydration, before he is subjected to any operation. In the following discussion this treatment will be taken for granted.

The Treatment of Simple Obstruction. For clinical purposes this will include the treatment of pyloric obstruction, most cases of obstruction of the colon, and obstruction of the small intestine of less than twelve hours duration. Let us consider these separately.

Prolonged Pyloric Obstruction. If the patient suffering from pyloric obstruction is in the late stages of starvation his tissues will not heal and he may die in from five to ten days of leakage through the suture line, despite efforts to feed him by the intravenous administration of glucose, or by any other method. A patient with a tremendously dilated and atonic stomach may not do well after gastro-enterostomy due to inability of the stomach to empty its contents through the stoma. Patients with either of these conditions are, in my opinion, most safely treated by a preliminary Witzel jejunostomy for feeding or by this combined with gastro-enterostomy if conditions permit.

Advanced Colonic Obstruction. In the presence of colonic obstruction all authorities are agreed that a preliminary enterostomy is the safest treatment.

Obstruction of the Small Intestine of Less than Twelve Hours Duration. Although this is not within the scope of the present paper, it may not be amiss to mention it.

Here the question of diagnosis is often a matter of great difficulty and importance. Waiting till a certain diagnosis can be made is a frequent cause of death. I deem it the safest rule to operate at once upon a patient in the class under consideration if his symptoms make it reasonably probable that he has an obstruction. If this is done, simple relief of the obstruction is usually all that is necessary.

Obstruction Due to Localized Peritonitis. In this group are those patients, who following operation for gangrenous appendicitis or appendix abscess, develop regurgitant vomiting. In the past we have treated them by gastric lavage, the intravenous administration of salt solution and glucose, etc., and have watched them slowly develop what we called general peritonitis. If at the first sign of regurgitant vomiting, and at a time when borborygmi can still be heard, a high Witzel enterostomy be done, the patient can frequently be saved. The trouble here is intestinal obstruction due to peritonitis and distention involving the cecum and terminal ileum.* The intestine above this is perfectly healthy at first, but it is rapidly injured by distention. The patient finally dies of general peritonitis if the obstruction is not relieved, caused either by rupture or gangrene of the bowel. It is essential to do the enterostomy early and before the bowel has lost the power to propel its contents. It is of no value in general peritonitis.

In a series of one hundred consecutive cases of gangrenous appendicitis most of which were complicated by abscess, and in all of which drainage was necessary, we performed Witzel enterostomies on six patients. The benefits of the operation were striking. I cite this series of cases to show how frequently intestinal obstruction complicates the post-operative course of late appendicitis.

The Treatment of Intestinal Strangulation. This has been one of the most discouraging problems of surgery. The treatment is not, however,

*Alvarez and Hosoi⁶ (Amer. Jour. of Surg. VI No. 5, pp. 569-577) discuss the effect of peritonitis on peristalsis and quote Hotz (Hotz G. Betrage zur. Pathologie der Darmbewegungen. Mitt. A. d. Grenzgeb d. Med. U. Chir. 20. 257-318, 1909) as authority for the conclusion "that injury to the muscle in peritonitis is due not to toxins but to distention by gas." Handley (Brit. Jr. Surg. Vol. XII, p. 417. Jan. 1925) holds that a localized peritonitis involving a segment of bowel produces a mechanical ileus above the inflamed segment.

entirely hopeless. My main reasons for this attitude are three:

1. That I believe the absorption of toxins from the gangrenous or semi-gangrenous bowel is chiefly transperitoneal. This route of absorption gives the body a better chance to build a barrier against the systemic invasion of the poison than would be the case if the absorption were by way of the mesenteric vessels. In addition to the experimental evidence for this method of absorption, I have the clinical evidence, obtained from four patients, of the total walling off of a loop of bowel, which from the history and the appearances noted at operation must have been gangrenous for two days or more.

2. The second reason is that the chief absorption of toxins from a strangulated bowel occurs rather late in the progress of the disease. This I have already discussed.

3. The third reason is that the intestine has a truly remarkable power to recover from apparently advanced states of strangulation. This is shown by common experience with loops of bowel incarcerated in hernias.

But, despite the foregoing considerations, the treatment of advanced ileus presents difficulties of a disheartening character. There is a well-defined limit at which a cure is impossible and should not be attempted. This represents the stage at which a lethal dose of toxine has been absorbed, and is indicated clinically by a change in the patient's mental attitude and the failure of his circulation. As long as the patient is mentally clear, has an intact circulation and some peristaltic activity his cure is at least possible. It is well to picture the abdominal condition we have to correct. At the site of obstruction there may be an incarcerated and gangrenous loop of bowel or a loop bound down by an adhesion, or a stretch of bowel involved by local peritonitis—to mention the more common possibilities. Above the site of obstruction the bowel is thin and distended with toxic fluid which is passing by diffusion into the peritoneal cavity. In addition to this the general condition of the patient is precarious.

There are, of course, two methods of operation, the indirect, consisting of the relief of the obstruction by enterostomy, the site of the

obstruction being ignored, and the direct, in which the site of the obstruction is searched for and the cause removed.

The indirect method carried out by means of a Witzel enterostomy has the great merit of avoiding the dangers of severe operative trauma and general anesthesia. It will relieve the distention if the bowel proximal to the obstruction is still viable. The method has the theoretical advantage of deflating the bowel slowly. The main objection urged against it is that it leaves untouched the seat of the obstruction, where there may be gangrenous bowel. But in the advanced case of obstruction the risk of leaving a gangrenous loop of bowel is less than the risk of general anesthesia and a major operation. For reasons I have already given we are justified in placing some confidence in the ability of the body to wall off for a time a gangrenous piece of bowel. After the relief of distention by the enterostomy there may still be the opportunity to deal directly with the obstruction at a time when the patient is in better condition.

We therefore deem enterostomy the method of choice for treating all advanced cases of small bowel obstruction. It is the only method to be considered when the obstruction is due to localized peritonitis from any cause. Operation directed at the location of the obstruction in this case can do nothing but harm—since it will spread the infection and not relieve the obstruction.

If the trouble is not due to a local peritonitis, and if the patient is still in condition to take a general anesthetic and to undergo a brief operation, the direct method is best. Especially is this true if the location of the obstruction is fairly well known. The surgeon should be content to stop when he has relieved the obstruction. In the performance of the operation the dilated loops should be restrained with great care and not be allowed to escape from the abdomen. Collapsed bowel should be found and traced to the site of obstruction. If the bowel at this point is gangrenous it should be doubly clamped on each side of the gangrenous piece and the latter carefully removed. Intestinal anastomosis should never be done. The cut ends of bowel should be brought out of the wound as a gunbarrel

enterostomy, and the wound closed about them. I have so treated six patients with gangrene of the bowel with three final recoveries, and five recoveries from the obstruction. If the bowel is not gangrenous, the cause of the obstruction should be removed and a Witzel enterostomy done. I disapprove of short circuiting operations to relieve the obstruction, because of the operative trauma involved, because of the risk of suture done on dilated bowel, and because of the ill effects of the operation in case the patient recovers.

The Use of Spinal Anesthesia in Intestinal Obstruction. Lack of time prevents a complete discussion of this topic. I know of three deaths on the table following spinal anesthesia induced to relieve intestinal obstruction. A patient with advanced obstruction has a low blood pressure, a crippled heart action and impaired respiration. As David¹⁸ has remarked, "to still further lower the blood pressure, or in some instances to interfere with respiration (by Spinal Anesthesia) is a somewhat heroic procedure." Spinal anesthesia was first suggested by Wagner¹⁹ in 1922 to distinguish between paralytic ileus and ileus due to mechanical causes. It is not to be relied upon for this purpose. Ochsner²⁰ and David,⁷ regarding spinal anesthesia as too dangerous, have studied the effects of splanchnic anesthesia. David concludes that the method can be of but little use in the treatment of paralytic ileus due to peritonitis, and that it is unreasonable to believe that it can cure a mechanical obstruction.

Diagnosis of Advanced Ileus. The diagnosis of the presence of advanced intestinal obstruction is not so difficult as that of early obstruction. Advanced simple obstruction in the great majority of cases is limited to a point at or near the pylorus, and to the colon. Clinically we may regard any case of obstruction at either of these locations as advanced, when there is a total blockage of the lumen of the bowel. At or near the pylorus the clinical history, the character of the vomitus and the physical findings are usually sufficient to make the diagnosis. In the colon the location can usually be found by the use of a barium enema.

For clinical purposes any small bowel obstruction should be regarded as advanced from the

time fecal vomiting is first observed. This indicates that a distention of the bowel has occurred sufficiently great to endanger its vitality and to make possible the absorption of toxic material. I have found that a flat, x-ray picture of the abdomen is of great value in determining the probable level of the obstruction and the degree of intestinal distention. From a study of this and of the general condition of the patient I decide whether to use the direct or the indirect method of operation.

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Hume-Mansur Building.

NEEDLESS ARM INJURIES*

DWIGHT F. CLARK, M. D., F. A. C. S.

EVANSTON, ILLINOIS

The danger connected with lesser injuries to the nerves of the shoulder has apparently gone unrecognized. A little child may risk serious future disability when a parent or some adult admirer, to the child's delight, picks him up by the arms and swings him around. Often no harm is done but if it should happen that the child's arm, either immediately or a little later, should become limp and useless, the trivial circumstance which has caused the disability may have been completely forgotten.

Cases of partial or even permanent disability which have resulted from minor causes have not found their way into the literature as have the more spectacular and manifest brachial palsies due to gun shot wounds, falls on the shoulder or difficult obstetrical deliveries. Yet just such injuries as those resulting from playful swinging are only too frequent in the experience of the general practitioner and the pediatrician. The surgeon sees them less often and it is an unfortunate fact that it is most often the late results rather than the early manifestations of such slight injuries which come to his care. If the potentiality of a complete paralysis even where there is no evident lesion were realized these cases would come earlier to treatment or better still the circumstances causing the injuries would be avoided.

It is easy to understand the liability to damage of the nerves supplying the arm, especially in the case of little children. The anatomical scheme of the parts involved illustrated by the drawing sketched from Deaver's Surgical Anatomy, shows a comparatively superficial position of the important cords and an interesting winding of blood vessels about the peripheral nerves. A brachial palsy results from the overstretching or the division of one or more of the component parts of the plexus, and an intra-neural or extra-neural hemorrhage may be responsible for additional pressure symptoms.

The mechanism of damage to the brachial plexus has been the subject of numerous studies in connection with birth palsies and similar in-

juries in later life. Duchenne¹ and Erb² working sixty years ago demonstrated that severe birth palsy was caused by a rupture of the fourth, fifth and sixth cervical roots of the brachial plexus and the term "Duchenne-Erb type of paralysis" remains as a permanent recognition of the painstaking dissections of these two men. Schultz³ in 1908 collected fifty-four shoulder dislocations in seventy-five per cent of which brachial palsy developed in varying degrees. Delbet and Chauchoix⁴ in 1910 reported thirty-five autopsies in which no rupture of roots was seen. From five operative cases in 1913 Taylor and Casamajor⁵ obtained poor results. They concluded that the structures in order of injury were the cervical fascia, nerve sheaths, nerves, and lastly the blood vessels, and that the scar tissue resulting had much to do with the permanent paralysis. Taylor⁶ in 1920 states his belief that the essential lesion is not damage of the shoulder capsule but rather a true nerve lesion, including torn fascia, torn muscle, torn nerve sheath and torn nerve, all infiltrated with blood from the torn vessels. He points out that as time passes a hard cicatrix binds all these structures together and forms an impassable barrier to regenerating nerve and to nerve impulses. About the same time Thomas⁷ applied forceps forcefully to still born babies, but in no instance was able to rupture the roots or the plexus. Adson⁸ in 1922 quotes two views with reference to brachial palsy; in immediate paralysis the lesion was primarily brachial; in subsequent paralysis the lesion concerned the joint. Reviewing the literature on obstetric paralysis Adson finds that the fifth and sixth roots are the ones most frequently involved, that there is rarely a laceration of nerve structure and that the scar several months after injury makes operative relief difficult. His own observations on 101 brachial injuries at the Mayo Clinic led him to the conclusion that the mode of treatment depends on the cause and the degree of the injury.

Realizing the difficulties of determining the exact extent of brachial damage following strain and knowing the importance of early treatment, the wise pediatrician seeks immediate surgical advice while there is yet time to immobilize for the combined purpose of maintaining that position of rest which will protect injured muscles and nerves and limiting that degree of hemor-

*From the Department of Surgery, Evanston Hospital, April, 1931.

rhage the pressure of which is probably responsible for many cases of paralysis. A recent typical case concerned a young child in apparently excellent general health but with an arm which was seen on examination to be flail, useless and dangling at the side. There seemed to be little if any pain and there was no particular outward manifestation of suffering except the inability to move the arm. On gentle abduction however the child complained of rather marked axillary pain. There was no evidence of fracture. Treatment in this case was conservative and quickly effective. The arm was placed on a pad in slight

injury, the importance of avoiding this sort of well intentioned but risky play and the advantage of well directed early treatment.

Preventive surgery thus plays the leading role in trivial brachial injuries. The proper abduction immobilization should be calculated to reduce and favor the absorption of hemorrhage and extravasation of serum which otherwise might exert sufficient pressure to cause or to prolong a serious palsy. It may in addition serve to prevent the pressure scars which are frequently observed in operative cases and which so often disturb brachial function. Yet preventive surgery, successful though it may be, is a poor substitute for prevention of initial injury. If potential disability is the price of the fun of swinging a youngster by the arm in a rotary fashion surely the danger need only be recognized to be avoided.

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THE SYMPTOMS AND TREATMENT OF PYELITIS

J. W. VISHER, M. D.

EVANSVILLE, INDIANA

In the last three years I have treated about thirty-five patients with acute or chronic pyelitis. A review of their histories discloses some rather interesting facts concerning the symptomatology and treatment. It must be admitted that these patients represent the most severe cases of pyelitis seen by the referring physicians. The more numerous, milder cases probably re-

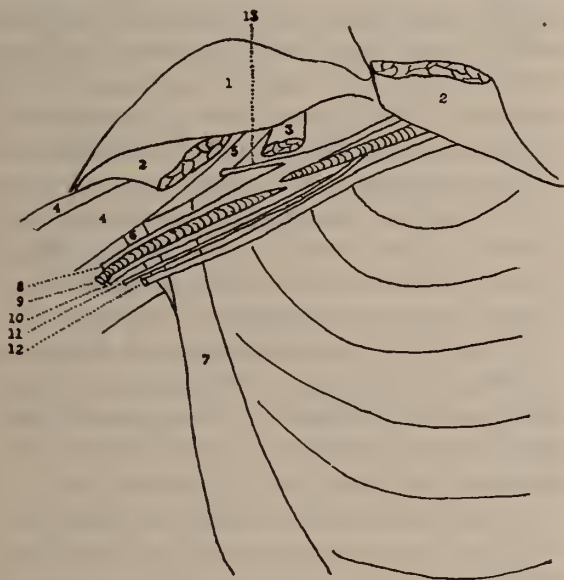


Fig. 1.

- | | |
|-------------------------------|-----------------------------|
| 1. Deltoid muscle | 6. Teres major muscle |
| 2. Pectoralis major muscle | 7. Latissimus dorsi muscle |
| 3. Pectoralis minor muscle | 8. Median nerve |
| 4. Biceps muscle (both heads) | 9. Axillary artery |
| 5. Coraco - brachialis muscle | 10. Ulnar nerve |
| | 11. Musculo-spiral nerve |
| | 12. Axillary vein |
| | 13. Musculo-cutaneous nerve |

abduction and was immobilized to the chest wall with the elbow in acute flexion. In twenty-four hours sensation began to return and slight motion was observed in the fingers. Under the treatment of immobilization both sensory and motor functions returned and were complete in ten days. With the arm restored to normal use the danger of future disability is in all likelihood averted. This instance of brachial injury is one among several in the experience of the writer many of which show no such fortunate recovery. It is intended to illustrate the danger of the

sponded to simpler methods of treatment. Most of these patients were very ill upon admission to the hospital, having been sick for from several days to several weeks.

The diagnosis of acute pyelitis is usually not difficult, though the condition is often overlooked unless a careful history is taken, a thorough physical examination is made and the urine is examined microscopically. In acute pyelitis, the onset of pain in the upper lumbar region is often abrupt, and it frequently radiates down the course of the ureter to the suprapubic region. The ureteral symptoms may be so severe that the presence of a ureteral calculus is strongly suspected. I believe that ureteral colic in these patients is usually caused by an acute ureteritis. In its absence and where there is no other obstructive lesion, there may be surprisingly little pain in acute pyelitis.

Tenderness over the kidney is a more constant symptom, and is present in every case to a greater or less extent. It is best demonstrated by having the patient sit or stand with his back to the examiner, who places his thumbs in the right and left costovertebral angles, just outside of the erector spinae group of muscles. Equal, moderate pressure with both thumbs will elicit tenderness on the affected side. Later, with the patient lying relaxed on his back, each kidney region may be compressed with one hand in front and the other behind. This test is not so accurate as the foregoing as tenderness in the spleen, gall bladder or bowel may lead to confusion. There may also be tenderness along the ureter of the affected side, but this can easily be mistaken for intestinal and appendiceal lesions. In severe cases, especially where there is ureteral obstruction, there may be rigidity of the abdominal muscles in the upper quadrant, which may lead one to suspect a renal tumor or hydronephrosis.

Fever, with, or without chills, is the third important symptom which makes one suspect pyelitis. The temperature is usually not very high, varying between 101 and 103, although in those patients having chills, it often reaches 104 and in one patient who recovered, it reached 108 after a chill. Between chills the temperature often falls to nearly normal. As a rule the

patients look and feel sicker than their fever would indicate.

Bladder symptoms are often entirely absent, and when present are usually not severe unless the acute pyelitis was preceded by a cystitis; or unless a chronic or recurrent pyelitis has previously infected the bladder.

Urinalysis is obviously essential to the diagnosis, and should be made on the second glass in the male and on a catheterized specimen in the female. Usually centrifuging is not essential, though it is preferable in every case. The sediment or a drop of the uncentrifuged urine should be examined first with the low and then with the high power lens, and search should be made for pus, blood, bacteria and casts. It is also well to stain the sediment to determine the offending microorganism. In the average case of uncomplicated pyelitis, there is only a moderate amount of pus, with or without blood and bacteria. When cystitis is also present, there is a large number of pus cells and usually many bacteria, and few or many red blood cells.

Cystoscopy with catheterization of the ureter on the affected side is the final step in the diagnosis, and the first step in the treatment. Usually I do not introduce a catheter into the normal renal pelvis, for fear of infecting it.

A specimen is obtained from the diseased kidney, and a phenolsulphonphthalein test is performed and an x-ray is taken to rule out renal stone. In selected cases, a pyelogram is also made, though I prefer to wait until the acute symptoms have subsided before attempting pyelography. It seldom gives very much assistance in the diagnosis of acute pyelitis, and may lead to confusion because of incomplete filling due to spasticity and renal irritability.

Treatment. The most important step in treatment of any infected organ is to obtain free drainage. Therefore, I make it a practice in all acute cases to leave the ureteral catheter in place for from twenty-four to thirty-six hours. The purulent urine escapes easily through the catheter and the inflamed kidney pelvis and ureter are put at rest. I also lavage the pelvis of the kidney thoroughly and instruct the nurse to inject into the catheter from four to ten cubic centimeters of warm, 1:200 mercurochrome solution, every hour. She first aspirates all of the

urine and then injects slowly the required amount of solution stopping if any pain is caused. These injections keep the catheter open, and the mercurochrome helps to overcome the infection. Usually the temperature falls to normal under this treatment, but a second or third cystoscopy may be necessary in rebellious cases.

Of almost equal importance in the treatment is an adequate fluid intake. It is essential to push fluids vigorously and if the patient cannot take enough water by mouth, it should be administered subcutaneously or intravenously in the form of normal saline and glucose. Liquid diet is preferable, and in the uremic or pre-uremic patients, it should contain very little protein and salt.

The bowels should receive careful attention, as most of these patients are distended and constipated. Alum enemas and laxatives such as magnesium citrate are usually successful in controlling these symptoms.

In patients in whom for any reason ureteral catheterization cannot be performed, I use intravenous medication. I have found mercurochrome 220 soluble in doses of ten cubic centimeters of a one per cent. solution dissolved in 50 per cent. glucose very valuable and reactions have been rare. Metaphen is less efficient, but is entirely free from reaction, and may be tried if one is afraid of mercurochrome. If these measures fail, and ureteral catheterization is still impossible, and if the patient continues desperately ill, pyelotomy with the insertion of a drainage tube into the pelvis of the kidney is our last resort.

Oral medication has not been mentioned, for the severe cases of pyelitis which we see in hospital practice have almost all received several different urinary antiseptics, without avail. I seldom use them in very acute cases, but in sub-acute and chronic cases, they seem to do good. I have used methenamine, hexylresorcinol, and pyridium, but prefer neutral acriflavine. It is not expensive, and never causes gastro-intestinal or other toxic symptoms, and I have been well pleased with the results. I have found it worthless in cystitis, and in many cases of pyelitis it does no good.

Other therapeutic measures which are of

utmost importance in prevention of recurrences are removal of focal infection and ureteral dilation. Treatment of sources of infection in the lower genito-urinary tract such as chronic prostatitis, urethral stricture, cystocele and endocervicitis is also very necessary in the prevention of further attacks. In the period of convalescence, generalized ultraviolet light irradiation and iron and arsenic tonics are valuable in helping the patient to regain his health.

The treatment of chronic pyelitis differs somewhat from the above regime. For pelvic lavage in these cases I use two or three cubic centimeters of two per cent. silver nitrate, and leave the catheter in only long enough for the cloudy urine to drain out through it. Pyelography is more essential for the complete understanding of chronic pyelitis, and ureteral dilation is more necessary in its treatment.

The results of treatment in my series of cases have been very good, though some patients have had to return from time to time for bladder irrigations and occasionally for pelvic lavage. I failed to give permanent relief in one patient with ureteral strictures, despite repeated dilation. Also a pyelitis of pregnancy complicated by hyperemesis gravidarum was so resistant to treatment that therapeutic abortion was required. All of the other patients except the most recent ones are now free from urinary symptoms, and when last seen had clear urines.

SUMMARY

The cardinal symptoms of acute pyelitis are renal pain and tenderness, fever, with or without chills, and pyuria. Chronic cases usually have little or no fever, except during acute exacerbations. Frequent and painful urination are present only if there is a complicating cystitis. Neutral acriflavine is perhaps the best oral urinary antiseptic.

Cystoscopy should be performed if oral medication does not result in prompt improvement, and a catheter should be introduced into the affected renal pelvis. In acute cases the pelvis is lavaged with 1:200 mercurochrome, and in chronic cases with 2 per cent. silver nitrate. If cystoscopy is unsuccessful, and the patient continues very ill, mercurochrome or metaphen administered intravenously is often helpful. If these fail, pyelotomy should be performed.

DIAGNOSIS OF SPINAL CORD LESIONS*

ERNEST SACHS, M. D.

ST. LOUIS, MO.

The focal lesions of the spinal cord that may require surgical treatment may be grouped under the following headings:

1. Tumors.
2. Fractures or dislocations.
3. Inflammatory processes, local or diffuse.
4. So-called myelitic lesions.
5. Congenital lesions.

I shall confine my remarks today to the tumors, so-called myelitic lesions, and the inflammatory processes. If time permits, I may say a few words about the traumatic conditions.

In order to make the diagnosis and localization in a spinal lesion, we make use of the following symptoms and tests:

1. Paralyzes, either spastic or flaccid, of the muscles.
2. Changes in reflexes.
3. Sensory disturbances.
4. Lumbar puncture and Quackenstedt test
5. Bladder examination with Rose's cystometer.
6. X-ray.
7. Special examinations, such as lipiodol or air injections.
8. Vaso-motor disturbances.

Let me say at the very outset that, though a careful history always must precede the examination, it is of far less importance or help in a spinal case than in an intracranial case. The one point of great importance in a spinal case is whether the symptoms have come on suddenly or gradually. Though the symptoms in spinal tumors may come on suddenly, it is very unusual for them to do so. One striking exception to this rule is involvement of the bladder; in two cases I have had of tumors of the filum terminale, which were published last year, the patient's first symptom in each case was acute retention of urine. These two patients sought a urologist and, fortunately for them, fell into the hands of Dr. D. K. Rose, the inventor of the cystometer. He immediately recognized that the bladder disturbance was due to a central nervous lesion and not to any disturbance in the

bladder or prostate. I have seen a number of patients with cord tumors who were treated for a supposed enlarged prostate and one man, a brother of a doctor, had his prostate removed by his doctor brother without relief of his urinary symptoms. Only after his spinal tumor had been removed were the bladder symptoms relieved.

Our problem is to determine the level of a lesion in the cord. Let us see how the eight tests I have referred to enable one to determine this.

1. The paralyzes of muscles. If the cord is so markedly compressed that all function is lost below the level of compression, the muscles will be spastic, sometimes so much so that they are like bands of iron and joints can only be flexed or extended with the greatest difficulty. At the level of the lesion the muscles may be flaccid, due to the fact that the peripheral neurone, or part of it, is out of function. But, with one exception, the condition of the muscles does not give one exact information as to the level of the segment involved. The one exception is the presence of what is known as Beever's sign, an invaluable but much neglected test. When a lesion is located at the level of the ninth or tenth dorsal spinal segment, the lower portion of the rectus muscles may be paralyzed, consequently when the patient is directed to raise his head from the bed the umbilicus moves up, pulled up by the upper part of the rectus which is intact. The umbilicus may move up an inch or two. This constitutes Beever's sign. Normally, if the upper and lower portions of the rectus are intact, when the patient flexes his head the umbilicus remains stationary though it may be retracted. Of course, the test must be carried out with the patient lying flat on his back. A positive Beever's sign gives one as accurate a level diagnosis as any sensory disturbance.

2. The reflexes below a compression lesion of the cord are increased, the patient is spastic and all the pathological reflexes may be observed—ankle and patellar clonus, Oppenheim and Babinski. If the lesion happens to be at a segment of the cord through which a reflex arc passes, one may note increased reflexes below the lesion, one or more absent reflexes at the level of the lesion, and normal reflexes above the

*Read before the Joint Meeting of the Illinois State Medical Society, May 5, 1931.

lesion. It is only in lesions of the cervical or lumbar cord that such differentiation by means of reflexes is possible. I have seen a number of cases where the exact segment could be determined because the biceps reflex was present and the triceps reflex was absent.

3. The most valuable test, however, of a focal lesion still remains the sensory examination. But there are sensory and sensory examinations and I find that mistakes frequently occur because some of the simplest and most fundamental precautions are neglected.

First, a sensory examination to be of value should be done in a quiet, warm room. When relative changes in sensation are being examined for, the patient's undivided attention is necessary and therefore he must not be distracted. When a patient is totally anesthetic below a certain point, of course, such a precaution is not so necessary. Second, the temperature of the room is also important as patients cannot discriminate so well if they are cold. Third, the patient must be stripped and uncovered as the weight of the bed clothes may distract him and influence his answers.

Sensory examinations are ordinarily made with cotton-wool, a sharp pin, and hot and cold test tubes, but occasionally one's ingenuity is hard put to it to establish a sensory level. I recall a patient, a high-strung French woman, whom I suspected of having a spinal tumor. Her legs were spastic but I never could find a definite level with the ordinary tests. Finally, one day when it was very hot, I tested her with a small cake of ice and definitely established a sensory level. I took out the tumor, a very small one, and she has been perfectly free of symptoms since. It is not very often that one removes a spinal tumor and has all spasticity and sensory loss clear up, but this does occur occasionally. Sensory levels to be of value must be found at the same level at several examinations.

4. These first three sets of tests indicates the level of a lesion but they throw no light on the pathology. A tumor or focal inflammatory process causes a block, partial or complete, of the cerebrospinal fluid. Therefore we always use the test devised by James B. Ayer of Boston known as the Quackenstedt test. This consists of doing a lumbar puncture with the patient on his side and connecting the needle with a fine

caliber glass tube. If there is a block in the subarachnoid space interfering with free movement of the cerebrospinal fluid, on compressing both jugulars the fluid will not rise, while if there is no block it will rise and fall rapidly. If there is a partial block, it may rise slowly and very slowly regain its original level. In addition to this, the fluid below a lesion may be yellow, coagulate, and have a higher protein content than fluid taken out above the lesion, preferably at the cisterna magna.

I have seen a negative Quackenstedt in a number of spinal tumors, especially intramedullary ones or where the tumor was too small to cause a block but, as a rule, the Quackenstedt is positive in the case of a tumor.

If the history indicates a slowly progressing lesion, a negative Quackenstedt test would not, in my opinion, exclude a tumor.

I still believe, as I always have, that a patient with the evidence of a focal spinal lesion is entitled to an exploration, granted that the surgeon has mastered the technique of laminectomy.

5. The cystometric studies of Rose have been of great help in differentiating lesions above the bladder center in the cord, lesions of the bladder center, and lesions in the peripheral mechanism. To those particularly interested I would refer them to Dr. Rose's series of articles.

6 & 7. The x-ray, of course, must always be made use of but, with the exception of fractures or dislocations and very occasional bony or cartilaginous tumors compressing the cord, it is of little value. When the level of a lesion cannot be determined by means of any of the foregoing signs, an opaque substance, lipiodol, may be injected into the cisterna magna and then followed by an x-ray picture with the patient in the upright position. If there is a lesion blocking or compressing the cord, it will be caught at that point and give a most beautiful picture, but as evidence accumulates we are coming to realize that lipiodol is by no means innocuous. It is not bland and harmless as was claimed by Sicard and Forrestier; it is irritating and causes a marked reaction inflammation in the meninges. About a year ago Loyal Davis published a striking piece of experimental work from his laboratory showing the pathological lesions produced by lipiodol. Others have reported similar observations and therefore I feel that it should not

be used promiscuously but only with great caution. When I have used it I inject from 1-2 c.c. sterile lipiodol into the cisterna magna. Spinal air injection for determining the level of a tumor, though certainly far less irritating, has not been satisfactory in our hands, as the detail of the plate is not sufficiently clear.

8. About three years ago Fay reported a series of focal spinal lesions in which he claimed to be able to establish the level of the lesion by means of vaso-motor changes in the skin. By suddenly exposing the patient to cold air or to cold water, he was able to see a change in the skin segments above and below the lesion. Though the report is of great interest, I have not found the test very valuable.

The problem of what to do for fractures and dislocations with cord symptoms has always been a difficult one and one on which men have differed very radically. There have been those who have advocated operating on fractures with cord symptoms, a second group who have advocated never operating on fractures, and the largest group that have held a middle course. I have belonged to the last group but have, in the past years, operated on fewer cases since Coleman has introduced the use of the Quackenstedt test in differentiating the operable from the inoperable cases. If the Quackenstedt test is positive, shows a block, a fragment of bone is compressing the cord and operation is indicated, but if there is no block operation will be useless. The application of this test has done away with a good many unnecessary explorations. It is a most valuable contribution to the subject.

The very rare focal inflammatory lesions, abscesses, should be operated upon.

Now, about the diffuse inflammatory lesions—meningitis. I began to do spinal drainage in meningitis some ten or twelve years ago and I still do it, though lately—in the last two years—I have done a number of cisternal drainages in preference to lumbar drainages. The lumbar drainage is not a difficult surgical procedure, though the cisternal drainage is a very formidable one, especially in inexperienced hands. We have cases well today that would undoubtedly have died without operation, and though the mortality will be high it is, in my opinion, absolutely justified and indicated since the mortality without operation is practically one hundred

per cent. We have done this operation in 40 cases with 7 recoveries.

Before closing, I must take up the question of what is myelitis and what can we do about it. A transverse lesion of the cord occurs suddenly without prodromal symptoms and produces a picture indistinguishable from tumor compression, but in these cases one never finds a positive Quackenstedt. We do not know anything about the pathology of this clinical picture and operation affords no relief. If there is any evidence of a block, these patients should be explored. When there is no block, the neurological surgeon will have to judge the case on its merits.

SUMMARY

1st. A tumor of the spinal cord is a surgical disease.

2nd. Every patient with a lesion of the cord on whom a definite level can be established should be considered a potential surgical problem.

3rd. The usual motor and sensory tests, together with the Quackenstedt test, are adequate as a rule to make the diagnosis.

4th. The injection of a foreign substance, which is nonabsorbable, into the spinal subarachnoid space is a procedure to be used with great caution.

5th. Drainage in meningitis, until some better procedure is discovered, is recommended in selected cases.

OPHTHALMIA NEONATORUM*

N. K. LAZAR, M. D.

Instructor in Ophthalmology, Northwestern University Medical School

CHICAGO

While it is known that there has been a marked and steady decrease in the number of cases of ophthalmia neonatorum and especially of cases of blindness due to the gonococcus since Credé¹ first published his work in 1880, most of us will admit there is room for improvement. With this view in mind I wish to present the results of a bacteriological study of 80 cases of ophthalmia neonatorum, and to discuss the in-

*From the Department of Ophthalmology, Northwestern University Medical School.

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cidence, types, prophylaxis and treatment of this disease.

The work presented, represents a series of 80 cases of ophthalmia neonatorum from the Eye service of the Cook County Hospital, Chicago, from December 1929 to January 1931. All cases were seen from 36 hours to two weeks after birth. Cultures and epithelial scrapings were made within a few hours after the condition was recognized. Besredka's egg medium was found to be capable of growing most of the organisms, except the gonococcus, and for this Kinsella-Broun-Garcia's³ medium was found to be excellent, growth appearing within 24-48 hours. Epithelial scrapings were made of all cases with a sharp spatula, no cotton applicators having been used in preparing the slides. Slides were stained by Gram's method, methylene blue and Giemsa. Microscopic examination of the culture was made from a Gram stain after 24-48 hours—and in a few cases 72 hours' incubation.

Of the 80 cases studied 36 were born at the hospital and represents 4187 births, 4 of these showing a Gram-negative intracellular diplococcus. The balance of the series, 44, were sent in by the Health Department, the family physician or brought in by the Society for the Prevention of Blindness or by one of the parents. Of this number, 32 showed a Gram-negative intracellular diplococcus.

The table below (Table 1) is self explanatory.

TABLE 1	
No of cases showing same organism in scraping and culture.	
Gonococcus	36
Pneumococcus	13
Staphylococcus	3
Mixed organisms	3
Morax-Axenfeld bacillus	1
No organism	14

A word as to the clinical picture. Every case varied, but on the whole one may summarize the general characteristics of cases as grouped in the above table. The 14 cases showing no organism on scraping or culture, were mild, discharge appearing on the 2nd to the 12th day, running a mild course and clearing up within a few days on irrigations of normal saline. Although the cause of these is uncertain, the most probable one seems to be the chemical effect of silver. The 13 cases that showed a Gram positive extra-cellular diplococcus were first seen from 2-15 days after birth. A number of these cases ran a more protracted

course and resembled in many respects gonorrheal ophthalmia, that is, the cases were quite severe for a day or two, but subsided with the routine treatment. None of these had corneal involvement, but a few showed tendency to bleeding when the conjunctival surface was rubbed with a wet cotton pledget. The cases showing staphylococcus, and those which showed a mixed infection on culture and scraping had an uneventful course. I call your attention to the one case showing a Morax-Axenfeld B. infection. This occurred in an infant 2 weeks of age and ran a protracted course, was bilateral and resulted in corneal involvement in one eye which went on to almost complete opacification. Incidentally the Giemsa stain showed cell inclusions in this case.

Table 2 is a resumé of all the findings. At-

TABLE 2		
Resumé of all cases.		
	Epithelial scraping	Culture
No organism	20	21
Pneumococcus	13	14
Staphylococcus	6	5
Mixed organisms	4	3
Morax-Axenfeld B.	1	1
Inclusion bodies	6	—
Gonococcus	36	—

tention is called to the 6 cases showing inclusions bodies, three of which showed no organism on scraping or culture, one a pneumococcus, one a mixed infection and a sixth, the Morax-Axenfeld B.

There can be no question in anyones' mind that the occurrence of ophthalmia neonatorum has been reduced since the introduction of Credé's method. In our present series of 4187 births there were 36 cases of all types, 4 of which were gonorrheal, the balance showing an organism or no organism on culture or scraping. Credé in his first published work shows a morbidity of 13.6% in 1874 before the use of silver and 0.49% in 1880 after the use of silver nitrate. Abegg⁴ in 1881 in a series of 2268 births had 66 cases of ophthalmia neonatorum after the use of 1/2% silver nitrate. Bayer's⁵ incidence of infection which was 8.1% to 14% in 1877, fell to none in 361 births after the use of Credé's method.

The occurrence of the different types of ophthalmia neonatorum in the present series is best seen as given in Table 1. It will be noted that less than 50% are gonorrheal ophthalmia.

About 1-5 of all cases show no organism on scraping or culture and the balance showed an organism on scraping, but not on culture or vice versa. Groenouw⁶ in an exhaustive study of 100 cases of ophthalmia neonatorum found 41 were of gonorrheal origin, about $\frac{1}{3}$ showed organisms and the balance no organism. Waldeck⁷ in 1922 quotes Cheney as showing 55% of 233 cases showing the gonococcus, Derby 51.3% in 149 cases and Stevenson 65% with argyrol as a prophylactic. There is a type of ophthalmia neonatorum commonly known as "Inclusion Blenorrhea" in which the inclusion body is found but no organism on scraping or culture. In the present series 6 such cases are shown, 3 of which showed no organism—and 3 with organism. In a perusal of the literature one is surprised to find the erroneous impression as expressed by Mehl⁸ and others that all cases not showing an organism on smear are so-called "Inclusion Blenorrhea." In the light of our present knowledge as to the pathogenesis of the inclusion bodies and the cases just mentioned, it does not appear to the author that the view expressed by Mehl and others is correct. The possibility exists that a certain type or types of undetermined organism, possibly of the nature of an ultra-microscopic virus may cause a conjunctivitis in which a number of such inclusions are formed as a product of the inflammation. The fact that the inclusion body has been found in the epithelial cells of other mucous membranes and in cases of ophthalmia neonatorum other than so-called "Inclusion Blenorrhea," and in different types of chronic conjunctivitis must lead to the conclusion that there is no specificity to be attached to these bodies.

One cannot discuss the question of prophylaxis of the eyes of the newborn without being drawn into a discussion of blindness due to the gonococcus. It is noteworthy that in 22 German asylums for the blind in 1876, Cohn⁹ reported an average of 30% as due to ophthalmia neonatorum, while in 1896 in 45 institutions this had been reduced to 19%. Waldeck in 1922 reported about 25% in the U. S. and Adams¹¹ 10% in Illinois in 1914.

Credé¹⁰ in 1883 reports that Bischoff who had disinfected the vaginal canal before birth with 2% phenol and then washed the eyes with salicylate water had a morbidity of 5.6% of oph-

thalmia neonatorum. A. Graefe¹² in 1879 by stroking the lids with 1% phenol showed a morbidity of 3.6% of ophthalmia neonatorum. There have been other drugs other than silver nitrate used as a prophylactic, but none have proved as efficacious as silver nitrate. Dauber¹³ in 1904 used protorgyrol, but the morbidity was much higher than with silver nitrate. Iles¹⁴ in 1927 reports a series of cases in which mercuriochrome was used. In 1929 Douglass & Stone¹⁵ of Australia were using 5% Argyrol when an epidemic broke out and this was stopped by the use of 1% silver nitrate as a prophylactic. The question may be asked, why do any cases of gonorrheal ophthalmia occur after the use of silver? Crede-Horder¹⁶ in 1913 reports several cases of gonorrheal ophthalmia as late as the 12th day post-partum, and each case had been traced to post-natal infection by the mother. Pohl¹⁷ in 1927 reports 17 cases representing 9,000 births, most of these being late infections. Lehrfield¹⁸ in a survey in Philadelphia in 1922 reports, that of the 35 cases of ophthalmia neonatorum reported to the Health Department, 15 gave no history of using a prophylactic. Many cases may also be traced to the use of old silver nitrate. In Germany¹⁹ it has become unlawful to use silver over a month old. Probably one of the most striking examples of the efficiency of silver nitrate as a prophylactic is reported by Norrie²⁰ in 1923. He states that in Denmark with a population of over three million only one case of blindness was reported as due to gonorrheal ophthalmia, and he attributes this not only to the state control of the midwife, but also to the use of silver nitrate. It will be seen by the foregoing that although silver nitrate will not prevent all cases of ophthalmia neonatorum, nevertheless, if a fresh solution is used and properly applied, one can say with assurance that cases of blindness due to the gonococcus may be markedly lessened, and that such state measures as will put the control of births under the direct supervision of a physician, together with the compulsory use of silver nitrate or its equivalent will go a long way towards eradicating all cases of blindness due to the gonococcus.

Within the past five years, according to my own knowledge, and within 15 years, according to information from members of the staff, there has not been one case of blindness due to the

gonococcus if the case when admitted had no corneal involvement. This wonderful record stands as a monument to those who are entrusted with the prophylaxis of the eyes of the newborn, and the treatment of ophthalmia neonatorum, and it stands as an answer to those who would oppose medical supervision of all births.

The treatment as carried out at Cook County Hospital is applicable to all cases of ophthalmia neonatorum. Those cases which are the result of a silver reaction should be treated with kindness. There is already present a conjunctiva that is suffering as the result of a chemical irritation. All it requires is an irrigation of saline or boric solution every 2-3 hours—and several hot applications a day applied for ten minutes at a time. Intensive treatment will do this type of eye more harm than good. It prolongs the irritation. Those cases due to the staphylococcus and other organisms except the gonococcus are irrigated every one, two or three hours according to the amount of discharge, together with an antiseptic like 1% mercurochrome dropped into the eye four times daily. In severe cases irrigations will have to be done more often. Silver nitrate 1% is rubbed over the conjunctiva once daily followed by an irrigation of saline. None of the above types have received any protein therapy, except the gonorrheal ophthalmias.

The gonorrheal ophthalmias are given intensive treatment. The first requisite for success is an intelligent nurse who understands and appreciates the seriousness of the case. She must be shown and taught how and when to irrigate the eyes; viz; so as not to injure the cornea. A hard and fast, non-flexible routine will never lead to success in the treatment of ophthalmia neonatorum. The eyes are irrigated with saline or boric solution every 15 minutes or when necessary. Iced compresses the first 24-48 hours applied continuously will help much in keeping down the edema. An antiseptic such as 1% mercurochrome is used 3-4 times daily and 1% silver nitrate is rubbed over the conjunctiva once a day, followed by an irrigation of saline. Some of the more severe cases are given 2-3 cc. of boiled milk, the milk being boiled for three minutes, and injected intermuscularly. Erben²¹ at the Elschmig Clinic in Prague in 1922 reported on a series of 45 cases of gonorrheal ophthalmia,

25 of the series receiving milk injections, about 3 cc., and found that the course was shortened, and the organism disappeared within two or three days. Others²² have used larger doses of milk.

In closing I want to summarize as follows:

1. That distinct types of ophthalmia neonatorum has been demonstrated.
2. That the so-called "Inclusion Blenorrhea" is a misnomer, and that the inclusion body is not specific for any disease of the conjunctiva.
3. That silver nitrate 1 or 2% stands out preeminently as the most efficient prophylactic to be used in the newborn, and
4. That medical supervision of all births, together with the compulsory use of silver nitrate as a prophylactic is the method of choice in reducing or eradicating all cases of blindness due to the gonococcus.

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DISCUSSION

Miss Audrey Hayden (Secretary, Society for Prevention of Blindness) Chicago: This winter we have put through the bill at the Legislature which you have all heard about. It makes mandatory the treatment of babies' eyes at birth. It has passed the House and Senate after a bitter fight with the Scientists and is awaiting the Governor's signature. We have found seventy-two babies blinded by ophthalmia neonatorum in the past eight years in Illinois. Our Society is working all the time for medical supervision of childbirth and we hope we have accomplished something.

Dr. N. K. Lazar, Chicago: One of the excuses for this paper was to call attention to the fact that some of the hospitals are using prophylactics about as efficacious as water.

VALUE IN BEDSIDE NURSING IN A PUBLIC HEALTH PROGRAM*

MISS MARGARET MCGREEVY

Nursing Supervisor, Hygienic Institute

LA SALLE, ILL.

The objectives in any public health program are "to assist in the efforts of the community to prevent disease, reduce the death rate, promote and conserve health by the application and dissemination of the knowledge we possess of preventive medicine."

The hospital nurse is trained to give skilled nursing care to the sick individual and in every way to help the physician to return him to normal health. When I graduated from training nearly twenty years ago, the average nurse was not concerned with elevating the standards of living or promoting the health of the community.

Today,* many hospitals attempt to give the student nurse at least a public health viewpoint—some offer an opportunity for observation or practice with an organized nursing staff having teaching facilities. Public health nursing courses for graduate nurses were made generally available throughout the country after the war. The nurse, just as the physician when he enters the field of public health, acquires a new outlook in the matter of both individual and community health. The nurse's business in public health is to help the physician and the health officer to reach the families of the community in an effort to promote and conserve their health.

In order to play her part as an ally of the local physician and the health officer, she needs in addition to good hospital training, the possession of knowledge of human nature, the ability for self-expression, and a personality necessary for salesmanship. She should know something about all of the health department, and about public health in general, and of other official and non-official agencies within or related to the field of public health. She should have accurate knowledge of the fundamentals of preventive medicine and have the ability to interpret them to families, especially mothers and children, in understanding language, and in a way not detrimental to the best interests of the family physician. We

have to remember that methods and procedures change as often as there are new discoveries in medical science and we in nursing try to keep step with our co-workers in medicine. The White-House Conference challenges us—both physicians and nurses—to more adequately fulfill the duties imposed upon us both in the institutional and in the public health field.

The work of the physician who is not giving whole time to public health is safeguarded in working with nurses well grounded in public health nursing. The preparation for public health nursing is comparatively new, and since the field is quite attractive it seems necessary that certain standards be maintained in fairness to both the nurse and the community pocket-book. Some exceptional nurses have done remarkable pieces of work with a minimum of preparation and a maximum of personality and good sense.

Dr. Vaughan, in addressing the American Public Health Association, states that the public health nurse constitutes the most important asset in health education. Fifty per cent. of the appraisal for health department activities is allowed for public health nursing. In making a bedside visit to the home the trained public health nurse considers the whole family as a unit and in giving bedside care she becomes aware of the other health needs of the family.

Some people may think any good nurse may do visiting nursing in the homes, but today we are asking our nurses who do bedside to interpret the whole health program to the people. That demands teaching, and teaching demands a well prepared nurse. It goes without saying that the nurse doing any kind of public health nursing, should be an ally and co-worker of the official health agency of the community.

Summarizing the aims of some of the various visiting nurse organizations, the American Red Cross Nursing Service, the Metropolitan and other life insurance nursing services, and the National Organization for Public Health Nursing, we have the following aims common to all:

1. To give skilled nursing care to the sick person in his home under the direction of his own doctor.
2. To instruct the patient's family in home nursing and the laws of health, in accordance with the teachings of the modern health officer.

*Read before the Section on Public Health and Hygiene Illinois State Medical Society. May 7, 1931, E. St. Louis.

Efforts are being made everywhere to include the practicing physician in the health program. Public health has reached the family, they say, but often is only tolerated by that family's physician. After all it is the family and the family physician who are directly responsible for the health of the family.

One link in this chain of health work in which the nurse and the family physician participate, is bedside nursing—a very effectual and practical way of working with the practicing physician for family and community health. Visiting nursing began with bedside care to poor people who had no one to care for them. Out of this has evolved a service that may reach all persons in the community regardless of financial standing, a service that is helping to solve a big economic problem, and one that helps to meet the objectives in all phases of the health program.

No bedside nurse's work is considered effective today unless she has used her opportunities while in the home to teach the family its particular needs in relation to hygiene and the prevention of disease. This concrete service is productive of confidence and friendliness without which no instruction is effective.

To make more clearly my points in respect to bedside nursing may I refer to the work of the Hygienic Institute with which I am connected. This is a private organization accepted officially as the Health Department for La Salle, Peru, and Oglesby, Illinois. It is situated uniquely for promoting community health. It serves an industrial community of approximately 30,000 persons. A full time Health Officer is in charge, and other personnel are employed to make up a fairly complete public health center. Politics make very little change in the health department. The nursing division has six field nurses. Each field nurse is furnished with a car.

Because of the difficulty in maintaining an absolutely generalized nursing service in a community that has eight parochial schools drawing their attendance from all sections of the towns we might say we maintain a modified generalized nursing service. One nurse is designated as a "floater" to carry the major and most urgent bedside nursing, the other five have their own district or territory, and each of the five carries her part of the bedside nursing, in addition to

schools and nearly all other phases of public health nursing. In the event of an epidemic in a school the work is so arranged that there is no delay in reaching the school early for inspection. Care is taken in giving out calls in contagious disease nursing to the nurses visiting schools.

The illness of the Metropolitan nurse who had established bedside nursing in two of our three towns, necessitated a change, and a contract was secured with the company for their work four years ago. An industrial nurse covered the third town until the beginning of the financial depression causing the industry to drop its nurse. Thus, there was considerable foundation for our work.

It was very evident the first year that both families and physicians had a stand-offish attitude toward the nurses from the health department, in the bedside program. The work of previous years fell off considerably. However, after a period of two years or so, things changed. During the winter months when respiratory infections are prevalent, we almost hesitate to say that such a service is offered because we are barely able to carry on without adding to the nursing staff. The service is more and more appreciated by families and physicians. A service that provides facilities for cooperative work in the home under the direction of the physician in charge of the case is a distinct advantage to both patient and physician. Many patients who are too ill to be moved, or are not too seriously ill as to urgently demand hospitalization, and whose financial circumstances are such that they can ill afford the expense of full time nursing or hospital care, in any event, are much benefited by the daily call and attentions of the visiting nurse service. Out of a total of 13,500 home visits for 1930, 30 percent. of them were calls in which bedside care was given.

No more than two calls are made on a patient without a physician in attendance. Orders are secured from the doctor if service is needed and desired, and continued as a rule as long as there is a need for care or supervision. Some physicians have given standing orders for maternity cases and others, and ask us to always give general care and make their patients comfortable until we can get in touch with them. The confidence of two physicians is expressed in the fact that when they left for their vacations last sum-

mer, they referred returns from hospitals, convalescents and prenatals for follow up during their absence and gave names of physicians they wished called as necessary. Last year 70 per cent. of the calls came from the families, 14 per cent. from the physicians, and 16 per cent. from other sources. Calls coming directly from families were classified as family calls although it was known many resulted from the physician's desire for nursing service. A few doctors have never called for service, and we have reason to believe that in some instances the service is tolerated because the family desires it.

The charity work for the last year was much higher than usual due to the non-employment in industries. The pay service reaches many of the most independent homes in the community.

Physicians' calls are for prenatal care to expectant mothers, postnatal care, care to newborn, infant feeding problems and care of the sick baby, demonstrations directed to educate mothers in care and nursing, demonstrations to young mothers delivered in hospitals, acute respiratory infections in all age groups, intestinal disturbances in small children, complications of communicable diseases such as otitis media requiring careful attention, catheterization and bladder treatments for women, demonstrations to patients of gynecological treatments to be carried out in the home, colonic flushings, ear and eye treatments, and other general medical nursing.

The service to chronic and senile cases is small but there is always some of it. An attempt is always made in these cases to teach the family to care for the patient, while the nurse gives supervisory care for the prevention of bedsores, and carries out any doctor's orders necessitating more skilled attention. The opportunities for teaching in the homes of the chronic and senile are limited, but friends are made for the health organization in all of its work in these families and among their friends. Physicians appreciate very much the advantage of the skilled nursing service when it is needed in these instances.

The nurse and the family physician working together for the promotion of health in the family have a common interest that begets understanding. The "we" spirit in the bedside care of that individual brings the physician and the

nurse together. It engenders a mutual respect and understanding which is beneficial to both. If the physician has any fear of encroachment on his practice or loss of confidence of his family, it is overcome in this effort to make the patient well. The doctor invariably gets more calls from the family because of that cooperation with the nurse. The end result of this working together is a better understanding all around. To some physicians, the laboratory of the health department is the only part that exists as far as they are concerned because it means service in their practice. It might be well to consider the direct advantage that bedside nursing is to the physician in his practice as well as its value in making the health program more effective.

Prenatal nursing is not developed in our program to our satisfaction, nevertheless with the growth of bedside nursing, our opportunities for prenatal nursing increased materially. Many of the expectant mothers in the beginning tolerated prenatal instruction because they were dependent on the nurse for care after delivery. They all know, now, the first thing the nurse does is to insist on medical supervision and it is explained to them why it is so important for them and the new baby. Each year has seen a lengthening of the time of the prenatal period for medical supervision and nursing instruction. The nurse is guided of course, in her instruction by the decision of the physician as to the place of delivery. The mother is instructed as is usual in prenatal care and kept in touch with her family physician. One physician said not long ago that he preferred to have his deliveries in a hospital because it was usually best for the mother and easier for the doctor, but he added: "95 per cent. of my people do not go to a hospital." He said the maternity service was valuable to him and his patients—everything was ready when he was called—the mother and baby had less complications in the home—there was better breast feeding—the family gave much more intelligent cooperation in homes visited by the nurse—he was relieved of many small details of the after care. And he said further: "You know the nurse can get any health work across to that family after she has cared for a mother and baby in the home." The same physician lists his prenatals with the nurse and sends his infants to the infant welfare station. This is the kind of rela-

tion that exists as a direct result or outgrowth of bedside nursing.

The first lesson taught in the home of the postnatal is the importance of following the doctor's instructions. The nurse demonstrates with her hands to the relative or woman in charge—cleanliness in all things pertaining to contact with the mother and baby. Sterilization of various things for their safety is taught by demonstration. Literature is left for the mother to read while she is in bed. Instruction is given in every detail to the young mother in regard to feeding, bowel and sleeping habits, the proper clothing, care of the nose, the genitals, and so forth, and she is invited to come to the infant welfare conference. This cooperation of the public health nurse and the physician in the program of maternity and infant hygiene is certainly foundational.

Frequent calls are requested by both physicians and families for postnatal service to mothers delivered in hospitals and who returned home early to save hospital expense, and also for demonstration of the care of the baby. About 40 per cent. of the bedside calls last year were to maternity and newborn. As our maternity, infant and preschool hygiene can be made more general and more effective, we have reason to conclude there will be as Dr. Haven Emerson puts it, an increasing "smallness of the number of abnormal children entering school."

The baby is often sick because of neglect of good baby hygiene. This makes a good background for positive health instruction. The baby might possibly recover without either the doctor or the nurse, but this is an opportune time to impress the mother with prevention. Whooping cough was recently covered up in a family who were neighbors to another having a five weeks old infant. Other children in the family contracted the disease and carried it home to the baby, whose condition became complicated by a serious conjunctivitis. The doctor gave whooping cough vaccine which seemed to aid materially in controlling the disease. The little one's life was despaired of for a week. The doctor requested nursing visits twice daily during this critical period and he saw the baby frequently. Due to unemployment, the family was in poor circumstances. The attention of the whole neighborhood was directed to this home, and the nurse

in her rounds made a point of the incident. The fact that additional medical and nursing attention were necessary to save the tiny life and that carelessness was at the bottom of it, was quite a lesson to the neighborhood in the necessity for control of communicable disease.

In one of our towns, the attendance to the well-baby conference hardly paid for the time spent on it. The population is largely foreign. The question was whether to continue, or use the nurse's time elsewhere. As an experiment, special emphasis was placed on the well-baby conference in our maternity bedside nursing especially with primiparas who really needed help and advice. Our impression that the 50 per cent. gain in attendance was influenced by bedside care was verified in an actual check-up showing that 48 per cent. of the new babies had bedside care in the homes, also that 35 per cent. of the new babies entering were from two weeks to three months old, and 80 per cent. of the new babies under six months of age were breast fed. We have to allow for the type of population here on the breast feeding. Not all of the credit goes to bedside nursing, since new mothers are visited with literature and the blue certificate of birth registration issued jointly by the State Department of Public Health and the Hygienic Institute. However, our figures justify our claim that the bedside nursing materially influenced the attendance to the well-baby conferences.

A doctor called for service to a very sick baby last summer with an undiagnosed illness. Precautions were used in the home with the other children. The disease turned out to be infantile paralysis. Nursing care was given during the acute condition and follow up calls were made after. There may be little to be said of the lesson in communicable disease control, but the family became good friends of the nurse, and she has found most understanding cooperation in infant welfare, preschool, and school situations since. Three preschool children of this family were brought to the first preschool clinic and immunized against diphtheria.

Preschool clinics were initiated in the health program last fall. The nurses talked about them on all kinds of home visits because they were new to the community and few had heard of toxoid. An actual check-up showed that 5 per

cent. of the attendance resulted from contact with the woman's clubs, 21 per cent. from newspaper items and unknown sources, 28 per cent. from bedside nursing, and 48 per cent. from all other visits to homes. The bedside was not the most important factor in interesting mothers, but it was equally as important as other contacts.

Recently a physician called for bedside nursing for an advanced case of tuberculosis not previously known to the doctor or to the health department. The home consisted of four rooms. The father, a man of 53, was the patient. His wife had done some midwifery and thought she was capable of handling the situation. A cuspidor was used for the sputum, and usually, in his weakened condition, he did not reach the cuspidor. The wife and her 15-year old son slept near by in the same room. A daughter of 20 had the other bedroom; she was doing piece work in a factory, part time, and was the only source of income. A married daughter was arranging to come home to be confined by her mother and bringing a 15-months old child with her. Grandchildren nearby played in and around the home. This is a situation which presents many problems—opened up through bedside nursing needs. A case of tuberculosis with many contacts, a prenatal, an infant, several preschool and school children, a boy in his teens directly exposed, and several social problems calling for expert direction from a trained social worker. This combination of problems not infrequently found by one nurse doing generalized nursing, calls for the best qualities that can be put into one woman. This again shows the distinct value of bedside service in a generalized nursing program which obviates the necessity of many specialized nurses entering the same home.

Hundreds of examples of this kind might be given to illustrate the general trend in teaching public health in bedside nursing.

The experiences of our own organization have been used to illustrate the effectiveness of bedside nursing in the promotion of a public health program, and are not peculiar alone to our organization, but are applicable to the work of any health organization.

To summarize briefly the foregoing points on the value of bedside nursing in a public health

program, may I repeat and emphasize the following:

1. In the formation of any community health program, it is well to keep in mind the obvious advantage of cooperation with any organization offering bedside nursing to all of the citizens of the community.

2. Although it takes the best type of nurse to do any effective public health nursing, the resistance to being given advice is broken down in the rendering of an appreciated service.

2. Bedside nursing is often the only means of reaching some homes for effective health teaching because it is something they can see and understand.

4. Health organizations profit in the contact with superior homes. The people in those homes become better acquainted with the work done, their influence helps the community attitude and sometimes the health budget.

5. The nurse stands against medical quackery and is a strong factor in helping the family to see proper medical care in the right light.

6. Hourly bedside nursing meets an economic need.

7. A public health organization whose keynote is service to patients and physicians goes a long way in bringing about cooperation in the community for furthering health work.

8. A city offering bedside nursing through any health organization, meets the objectives for any public health work, namely: "assisting in the prevention of disease, the reduction of death rate, the promotion and conservation of health by the application and dissemination of the knowledge we possess of preventive medicine."

DISCUSSION

Mrs. Irene McCullough, Supervisor of Nursing, Metropolitan Life Ins. Company: I think Miss McGreevy's paper definitely illustrates the need for well trained nurses in the Public Health field. Unfortunately the idea is still somewhat prevalent among the medical, lay and even nursing groups that any graduate nurse is qualified for public health work. We have numerous nurses applying for public health positions and when we mention the fact that additional training and experience beyond the hospital training school is essential they are quite amazed. We do find many hospitals of today including public health nursing in their curriculum, but unless the practical experience particularly is given under excellent supervision it is better that the nurse not receive this phase of nursing during the hospital training.

We are making every effort to maintain the standards

set up by the National Organization for Public Health Nursing, whereby we encourage nurses interested in entering the public health field to either take a credited course in public health nursing or connect with a well organized Public Health Nursing Association.

The work of the nurse in the home is much broader in all aspects than her work in the hospital, so much so that unless she has had a post-graduate course in public health nursing or a year or more experience under supervision in a public health nursing association, she should never attempt taking a position where she will work alone.

I believe anyone familiar with the work of the public health nurse will agree that she constitutes the most important asset in health education. The scope of her activities depends largely upon the program of the community in which she is working. Some programs specialize in school nursing, others in tuberculosis nursing, still others in industrial nursing, child welfare work, etc.

The generalized nursing program includes bedside nursing. It is still the belief among many that a nurse rendering bedside nursing is not a public health nurse. She is absolutely a public health nurse to the fullest degree. She visits the home in the time of need and through her work with the sick member of the family is able to observe health and social problems existing in the home and accordingly put over her instruction to the family as a whole with greater effect than merely visiting the home for health educational purposes.

As Miss McGreevy stated, the objective of giving bedside care in the home is first to give skilled nursing care under the direction of a physician. I would like to emphasize this point, "under the direction of a physician." I believe the great majority of nursing associations today permit nurses to carry a nursing case for only two visits, unless a physician is in charge. On the first visit the nurse advises calling the family physician. She is permitted to make the second visit to ascertain whether or not this advice has been carried out, if so, she secures his orders for the patient; if a doctor has not been called she must dismiss the case. The well trained nurse realizes there is a distinct line of demarcation between the duties of the doctor and those of the nurse. One supplements the other and in the nature of the case their work is one of co-operation. This year many organizations are evaluating the contents of the nursing visit; it is possible that in many instances the second visit on a case where no physician has been called can be eliminated. The family being instructed on the first visit to telephone the nurse in case a physician is called and her services are needed or desired.

The second objective in a bedside nursing program brought out in Miss McGreevy's paper—to instruct some member of the family in home nursing and the laws of health in accordance with the teachings of the modern health officer. The visiting nurse is in the home one hour or less on each visit. The frequency of visits depends upon the type case. The patient usually requires care during the interim of the nurse's

visits; therefore, she realizes the importance of instructing the most capable member of the family how to carry on during her absence. The nurse, therefore, goes into detail, explaining over and over if necessary how to give care and make the patient comfortable, the prevention of bed-sores, the giving of necessary treatments, etc. The nurse must know how to delegate responsibility and which responsibilities to delegate and adapt her teachings to the ability of her families to understand. Most nurses realize that eye-minded is more effective than ear-minded and accordingly carries out a very definite technique in connection with her work in the home. There is a technique to be used in connection with the nursing bag. Her hands must be thoroughly cleansed before handling any of the articles in the bag and again cleansed before replacing the articles. There is a technique in connection with the cleansing of the thermometer and in all phases of nursing. Through these procedures the nurse protects herself, her patient, the family and the community and introduces the principles of sanitation and personal hygiene wherever she goes.

The interest of the visiting nurse lies beyond the confines of the sick room. Her work in the home gives her a great opportunity to observe the health habits of the members of the family and teach the prevention of disease, sanitation and hygiene.

The visiting nurse through this well rounded service in the home is thus a public health worker, a social worker, a teacher and family friend all combined.

Miss McGreevy's paper pointed out very clearly the effect of bedside nursing on other activities included in a public health program. There is in every community a definite need for bedside care in the home. This is largely due to the lack of hospital facilities. In closing this discussion, I would like to quote from a paper given by Dr. Haven Emerson. He claims that modern medicine has for fifty years developed a technique in hospital care which depends on this same type of skill. He adds that until such skill, loyalty, resourcefulness and devotion is provided in our communities, both urban and rural, to the degree that every family receive the benefit of it in its home, preventive medicine will fail to some degree in its objective, and public health work will continue to be relatively crude and incomplete. He further states that at least one nurse trained in bedside nursing and in public health measures is needed for each two thousand persons of a modern industrial population.

Dr. Arlington Ailes, La Salle: I would like to stress a point in this paper. It is in the paper, but it is just a matter of stressing it. It is my belief that it takes a higher type of nurse to do public health nursing alone than it does to do public health nursing combined with bedside nursing. We have a lot of public health executives who say that the public health nurse has no place at all in a bedside program, or the reverse if you please, that bedside nursing has no place in a public health nursing program, but I am convinced it has.

There are two things to be greatly desired in put-

ting across a public health program. One of these is to reduce the resistance on the part of the public, to being told something or educated, by our public health nurses. The other is to get the sympathetic cooperation of the family physician. I claim that it takes a superior person to approach our people properly, when the sole mission is to demonstrate or educate. There is a certain resistance when you try to change the customs and habits of people. But when the nurse goes into the homes of these people to give them a service which they want and appreciate, like the care of the sick, she encounters no such resistance. The mental atmosphere is one of friendliness and confidence and their minds are then more receptive to public health suggestions. These people then often divulge their innermost thoughts to these nurses, and the nurse then has a much better chance to know what is needed and accomplish her mission, without in any way appearing critical or being considered an intruder.

Therefore, I claim that we can get along better in this type of combined program, with a lower type nurse, or in other words a less superior person, than we could if the bedside feature were excluded. Of course the nurse must have good sense and judgment and be trained in both public health and bedside. We take our nurses directly from the hospitals, and train them on our staff in both these fields.

Now this other side in bedside nursing that Miss McGreevy also pointed out. The doctors always appreciated our laboratory service, but we felt that there was a gap between our public health service and our physicians. Meddling nurses was the attitude of many of them. But now when the nurses go into homes to do bedside nursing also, and are very careful to safeguard the interests of the physicians in those homes, the physicians see what a wonderful service can be given them and they appreciate it. In many cases where patients cannot be taken to a hospital, because of economic reasons, or where the case is such that it doesn't justify hospitalization, the physicians call our department for service. They are gaining confidence in our nurses and the work, and it is inculcating a feeling of friendliness and cooperation. We are thus able to put across other programs, because they know and understand us better. This feeling of cooperation has resulted in the physician's endorsement of our various clinics and our immunization program, and has greatly lessened the gap that usually exists between an active health department and physicians. This we think is due largely to the bedside nursing program, and could not have come so readily through our public health program alone.

Mrs. Irene McCullough: Regarding the statement that it takes a less superior type nurse for bedside nursing than one engaged only in educational work. I think perhaps it would take a nurse who had more personality and tact for educational work only, but it takes an equally qualified nurse to carry a program with bedside nursing included. The nurse doing bedside work has an easier approach to the family but during her service in the home encounters many social

and health problems and unless well experienced is unable to recognize these problems and make the necessary plans and adjustments for their improvement.

You mentioned that in LaSalle you took nurses for public health work which includes bedside nursing, directly from the hospital. In LaSalle, however, these nurses are under the daily supervision of a well qualified supervisor. They are enabled to go to her with any problems encountered during the day. She visits in the homes with the nurses and interprets health and social problems and measures for their improvement, etc. This experience is comparable to the experience given in larger visiting nurse associations. It is, however, a handicap to a nurse who has had only a hospital training and private duty experience to attempt working alone and without supervision.

I, therefore, am of the opinion that perhaps a nurse engaged in purely educational work needs more tact and personality to do an effective piece of work, but do not agree that we should think in terms of lesser qualified nurses for programs including bedside nursing.

X-RAY IN DIAGNOSIS OF THORACIC PATHOLOGY*

HERMON HARRISON COLE, M. D.

SPRINGFIELD, ILL.

In the presentation of a paper to the Section of Radiology I naturally have some misgivings since I am neither a radiologist nor do I possess the necessary skill to make serviceable plates. My knowledge of the specialty is limited to the reading of plates made by others as part of the clinical studies I have made on thoracic disease in the past decade. I might better title this paper "Use and Abuse of X-rays," or "the clinician looks at radiology," for certainly we are both somewhat to blame for errors that occur all too frequently. Please interpret my remarks from the standpoint of a thoracic diagnostician looking at x-ray as a thing apart and not as his whole existence.

The habit of partial specialization has been a wonderful thing for the profession and for the ailing public during these past few years but unless we understand it and the factors that have brought it about, and most important, the proper use of specialized knowledge in limited fields, it may become a two-edged sword for all of us. If this is our net result the method should, and will fail. The best service at the least cost is the goal. Fortunate indeed is he who can keep abreast of his own line these past few years; and

*Read before Section on Radiology of Illinois State Medical Society, May 6, 1931, E. St. Louis.

attempting to cover all fields would leave no time for actual practice. There are three main types of answer to the problem of a general practice of burdensome proportions. One is a rise in price levels and weeding out. This method has serious objections to most of the profession. The second is group practice merging with sharp specialization with a general practitioner and diagnostician as the head of the organization. The drudgery is borne by the group as a whole and diagnostic and therapeutic goals are reached by assembling. This method has obvious advantages and some disadvantages not so obvious. For instance, only a few can be the head of clinics and many physicians object to losing their identity and individuality to a group, for physicians are first, last, and always strongly individualistic. Then, too, many lack the genius of organization.

Limited specialization and the use of hospital and laboratories is the method most of us use and hence the x-ray laboratory looms large as an aid in most of our activities. Bear in mind please, that diagnosis is our common denominator for all branches of the profession concerned with patients and that specialization is a post diagnostic division. This fact gives us common ground for discussion.

What should the clinical diagnostician expect of the radiologist in the thoracic field? What has the radiologist a right to expect in return?

Since our interdependence is great it seems that if both are expected to make the diagnosis then the facts of the history, physical findings and laboratory should be in the hands of both men. I am sure that you will agree that such cooperation is unusual except where the two men have had years of experience together. The radiologist, purely on his own can interpret light and shadow in terms of relative tissue density and note unusual locations. Too often much more than that is expected of him. In my judgment, this is unfair to him and often dangerous to his reputation and yet I have seen many radiologists make a clinical diagnosis and at times even suggest treatment, and worst of all attempt prognosis. And what is more, do all these things *in writing*.

To refuse a diagnosis by radiograph alone, takes more courage than shrewd guessing. The limitations of physical examinations of the chest

are too well known to radiologists generally, to require more than passing comment. We admit freely that we cannot delineate the heart borders with less than two centimeters of error yet the orthodiagraph will do so. It is rare to diagnose by physical signs alone, a pneumothorax of less than five hundred cubic centimeters capacity and I have missed many a cavity of less than three centimeters and sometimes much larger where the bronchial tube has been blocked to it. These errors I expect the x-ray to protect me from. Their uniform detection requires refinement of technique that very few, if any, clinicians possess. Any fair minded man will admit it, I believe, and need not be ashamed in doing so. On the other hand there are far too many radiologists who attempt things for which the x-ray is not adequate. I have yet to see any radiologist with certainty and uniformity detect activity in a single plate in a given tuberculous chest. A progressive lesion can be diagnosed by x-ray if two or more plates are taken with an interval of several days or a month between. Differences between anthracosis, silicosis, bronchopneumonia, carcinoma, fibroid tuberculosis and syphilis are not striking enough at times for certain x-ray separation. There may be men expert enough to do it, but I have not made their acquaintance. If asked to do so he has a right to history, blood examination, sputum and other pathological reports and the physical findings as well, for the protection of his professional reputation. I neither ask such risks nor expect it of the very good friends I have who do the x-ray work for me. Usually the plates are read in conference and I watch the fluoroscopy, or do it myself and the question is settled by two heads together. Occasionally time proves us both wrong much to our chagrin!

From my viewpoint the radiologist should read a plate in terms of pathological densities without reference to final diagnosis. This last is the province of both men working together, or the clinician alone. I do not subscribe to making the radiologist a mere photographer. My plan makes him much more than this and makes him party to any credit or error that is made. Knowledge implies responsibility according to its extent and x-rays may at times be dangerously misleading.

I believe the clinician is woefully negligent at

times in his x-ray dealings, in his desire to secure x-ray help he often fails to explain to the patient just what it can, and cannot do. At times it is overemphasized, naturally enough, and at times not insisted on where it should have been. We have not learned to use the lateral and oblique positions as often or as intelligently as we should and the fluoroscope is sometimes better than a plate where diaphragmatic or mediastinal motion is in question. We have overlooked a good deal by not recognizing that the roentgen ray has three methods of showing pathology, simple density, motion, and outline of opaque substance within a hollow viscus such as lipiodol in the bronchi or barium in the esophagus.

In spite of many adverse opinions, I believe all chest plates should be made at the two meter distance. Not only does this lead to uniformity of standards for comparison and little distortion, but such plates can be used for cardiac measurement. I am also a strong believer in very short time exposure as only by this can good detail be secured in the lung, and detail is all important. Stereoscopic plates are easier to take with good apparatus than two plates of other types and should be the rule rather than the exception. The amount of over or under development one likes depends a good deal on the individual taste and varies as much as our time honored stethoscopes. It depends on what one is accustomed to within rather sharp limits. I believe that color and density perception in men is equally as variable as acoustic ability. The position of the patient may often decide the difference between pleural fluid and pleural thickening so that upright posture wherever feasible is safer procedure, all things considered. We have all seen relatively large effusions completely overlooked by neglect of this simple precaution.

The value of the Roentgen ray from the standpoint of thoracic disease can scarcely be overestimated. It is used too little rather than too much. I am sure that the percentage of patients in which I demand it has risen markedly in recent years, though I doubt if I need it now as much as I did then. Perhaps hard knocks and bitter experience have made me more wary. I have learned that in medicine there is no "always," and no "never," and that if one practices long enough he experiences most of the mistakes and disappointments that others have had. I

should certainly hesitate to deny tuberculosis without the comforting assurance of the x-ray plate. I agree with Plunket (N. Y. State Journal of Medicine 30: 1420-1422, December 1, 1930), who said "Pulmonary tuberculosis without diagnostic physical signs, exists more commonly than is generally appreciated, even in moderately advanced or far advanced stages."

Again we have found in our Springfield plan of complete study as reported in part by Bain (Illinois Medical Journal, December, 1927) that physical examination and x-ray together will give a proper diagnosis three times as often as x-ray alone or twice as often as physical examination alone.

In conclusion let me reiterate that I believe the x-ray to have been of immeasurable advantage to the men interested primarily in lung work. It is not at present as generally employed as it should be. On the other hand x-ray photographs should be advised with intelligence and the type changed to produce the end in view. Routine x-ray plates of the chest, while valuable, will not always be sufficient. What we need I believe is not more plates, but more use of all the x-ray has to offer.

AN EVALUATION OF DIAGNOSTIC METHODS IN GASTRO-INTES- TINAL DISEASE*

LOWELL D. SNORF, M. D.

CHICAGO

Of the commoner groups of symptoms with which the general practitioner comes in contact none are more complex in their manifestation than those arising from the gastro-intestinal tract. Their interpretation is even more baffling because of the multiplicity of sources of irritation and the varying responses of individuals. Too often the physician has in mind neither the pathology most frequently present nor the natural disturbances arising therefrom. He must appreciate that probably less than 25% of his patients who are complaining of symptoms have organic disease and when organic defects are revealed he must still be alert to the possibility of associated functional disorders, that he may in-

*Chairman's address read before the Section on Medicine of the Illinois State Medical Society, May 6, 1931, East St. Louis.

telligently carry on the subsequent treatment. Why is it that so many examinations are concluded and the final diagnosis made of neurasthenia, nervous indigestion or chronic appendicitis? What a multitude of sins and mistakes are covered by the term nervous indigestion. If it could be intelligently interpreted instead of a universal catch-all, we could feel more lenient to its use and fewer patients would be mistreated. Such diagnoses are made because of an inadequate knowledge of the normal physiological function and a lack of appreciation of the close correlation between the gastro-intestinal tract and the other organs of the body. If he was thoroughly conversant with these facts he would not find it necessary to be so dependent on the roentgenologist, for instance, to get the final opinion. An x-ray examination is usually very helpful and often necessary but is seldom of great value in interpreting the functional type of disorder except to rule out organic pathology. For after all disturbances produced by dietetic error, or associated with pathology of other organs can only be fully understood by sitting down with the patient and carefully working out the picture. Too commonly, our present methods when analyzed appear more and more dependent upon laboratory and mechanical technique and not enough on the personal investigation. In our text-books today we are burdened with terms in diagnosis which should be relegated to the scrap heap and are largely of historical interest. For instance gastrosuchorhea, from the days of Reichmann referring to excessive secretion, which we now know is a symptom associated with obstruction at the outlet of the stomach, or hyperchlorhydria, also a symptom associated with perverted function of the stomach. The late Knud Faber in his book "Nosography" has very classically presented a review of the conceptions of the various schools developed over the last century, and shows the importance of clinical medical research as one of the important means of developing a more complete and rational understanding of diagnosis. Our present day views are so colored by the older views of the teachers, such as Kussmaul, Riegel, Leube and others, that such a review is perhaps justified.

About 100 years ago the famous French pathological anatomist and clinician made the impor-

tant observation and contribution placing gastric ulcer as a clinical entity. From the clinical point of view no intensive or progressive thought was given to the subject until Kussmaul in 1867 revived the use of the stomach pump. This seems to have had a peculiar and stimulating influence upon investigations in disorders of the stomach. Szabo first recognized the presence of acid; Velder noted the absence of acid in carcinoma of the stomach and in the presence of very high temperature; Luebe studied the affect of food on gastric secretion; and Ewald and Jergensen contributed the idea of a test meal and developed a soft pliable stomach pump. This as Faber has noted marked an epoch in medical diagnosis generally and in gastro-intestinal diagnosis in particular. A tangible method of approach was developed which, with certain changes, has been found to be of great value at the present time. Certain erroneous conceptions however, based on this early interpretation, have been handed down to us. The underlying pathology was often overlooked and attention given almost entirely to symptoms. Today our text-books are still filled with the old terminology where these symptoms are dignified as disease entities. Unfortunately for us and in fairness to the older teachers we have added more confusion to the list by including such terms as auto-intoxication, viceroptosis, mucous colitis and the like. Granted that such conditions exist, nevertheless it must be appreciated that these are complications of a perverted physiological function or a manifestation of a constitutional abnormality. Nervous indigestion, if we may allow the term, is an expression usually of some nervous instability where the symptoms of the gastro-intestinal tract are paramount in the mind of the patient.

Improvements in the diagnostic procedure of the past 25 years may be credited largely to the dual role of surgery and roentgenology. Organic pathology has been visualized and attempt made to correlate it with the general symptomatology. Perhaps to Soupault and Hartman in France must go the credit for proving the relationship between excessive gastric secretion and obstructions from peptic ulcer. An internist and surgeon working together, correlating their views and observations, made possible this contribution. Moynihan, Mayo and Sippy in the early

part of this century helped to crystalize the clinical picture of peptic ulcer. We can, with little difficulty, arrive at a working diagnosis by weighing carefully symptoms as presented by the patient and this has been made possible through the careful observations of this great group of teachers and clinicians.

Were it true that all lesions and disorders of the gastro-intestinal tract could be clearly ascertained by one method of examination alone, it would only be necessary to refer to that procedure for evidence. Fortunately this group of organs may be quite accurately studied by such methods as will permit of fairly dogmatic interpretation. This investigation must proceed along an orderly and routine fashion.

Let us suppose that one is to investigate a patient with a chronic gastro-intestinal disorder complaining of epigastric distress and vomiting. What organ is involved? Is it the stomach, colon, gall bladder or referred from the heart or lungs? This can be properly decided only after a careful history has been taken and such tests made as are indicated. It is obvious that a definite knowledge must be had of the characteristic symptoms and signs of the lesions occurring in these organs. History taking is an art. It requires an imagination and definite amount of purposeful effort. One must inquire as to the nature of the distress and when it occurs. Does it appear 1 to 2 hours after eating and occasionally at night time? Is it relieved by food, alkali and vomiting? Attempt should be made to elicit what has been called a "typical day" history, that is find a regularly recurring distress conforming to the same general characteristics day after day. This requires careful questioning.

Assuming the presence of a peptic ulcer one may determine the presence or absence of obstruction at the outlet of the stomach, hemorrhage, continued secretion, perforation, and even suspect the possibility of a secondary carcinoma engrafted upon the ulcer lesion. This knowledge will aid in prognosis and to a large extent determine the method of treatment. The obstruction of the stomach would be indicated by vomiting of food and presence of night distress; continued secretion by vomiting large quantities of liquid out of proportion to the amount taken into the stomach; perforation by severe sharp

lancinating pain and usually a history of shock; and secondary carcinoma by variations in the clinical picture incompatible with an uncomplicated ulcer. In the patient with primary carcinoma of the stomach evidence of loss of weight and appetite, distress gradually increasing in severity and not definitely related to eating, and evidences of cachexia will be suggestive of the lesion. Both epigastric distress and vomiting are present definitely as a part of the symptom complex, migraine. The entire examination may be negative except for the history of recurring attacks of headaches. Usually the mother or father have been victims of the same trouble. Frequently the patient has been little concerned by the headache but much distressed over the vomiting and other evidences of what he or she call indigestion.

Gall bladder disease may be easily confused although a careful history plus a complete examination will make the differentiation clear. The tabetic patient may vomit blood and investigation reveals the added pathology of peptic ulcer.

In disorders of the intestine one will study, first the diet, noting evidence of food idiosyncracies, starch intolerance, influence of raw fruits and vegetables and possible vitamin deficiencies; second, characteristics of the stools, whether hard and dry, soft, mushy, liquid, tarry, and also presence of blood and fermentative or putrefactive odor; third, subjective symptoms of pain, cramp, colic, borborygmus, flatus, and distress related to bowel movement; fourth, relation to nervous instability and to associated diseases as thyro-toxicosis, tuberculosis and syphilis, pernicious anemia and cardiac trouble.

There are more real sufferers on the street today with intestinal disturbances than almost any other. The mortality is low but the morbidity is high. Constipation which is usually more apparent than real can only be diagnosed by careful history. This patient often follows an unsatisfactory diet and takes an excessive amount of cathartics and enemas. His intestinal tract is over active as indicated by the loose movements and abdominal disturbance. The patient's conception of his trouble is based on the necessity of cathartic for a stool but if his habits are analyzed carefully it will readily be noted that this whole procedure is in error and with

slight change in diet and routine a normal action will follow. When true constipation is present a hard and dry stool will be the most obvious evidence. The results following the self treatment because of erroneous conception of this kind has given rise to the numerous terms as atonic constipation, spastic constipation, spastic colitis or mucous colitis. This is the chronic intestinal invalid as some one has so well said, the patient who has received advice from neighbor, friend, doctor and quack regarding tricky diets, cathartics, various lubricating oils, colon irrigations and other types of curious treatment devised by the imaginative therapist. The irritation may be only slight as from too much raw fruit, bran or buttermilk, but only a history could have determined the cause of and proper treatment for the irritability. Or perhaps alternating constipation and diarrhea is present, the loose stools being frothy and unformed at times. Usually a varying degree of starch intolerance is present. Inquiry into the nature of the diet and the character of stool will reveal more about the patient with chronic intestinal upset than any other method.

Physical Diagnosis is of less value here than in diseases of other organs but general inspection may reveal the clue to pathology in the gall bladder, the palor and wasting in carcinoma, the presence of visible peristalsis and gross tumor masses. The palpating hand will note rigidity, tumors in the abdomen, evidences of tenderness and spastic contraction of the colon. The rectum is routinely examined for fissures, hemorrhoids, strictures and tumors. A proctosigmoidoscopic examination is always done where there is complaint of symptoms of the rectum. A careful examination of the heart and lungs, reflexes, etc., are imperative.

Laboratory Work besides covering a routine examination is primarily concerned with the secretory and motor function of the stomach and intestine and the presence of blood in the gastric content and the stool. A test breakfast given on an empty stomach will reveal the presence or absence of ferments in the gastric juice. Perhaps little can be determined from the acid curve; certainly duodenal ulcer must not be diagnosed on the presence of hyperacidity alone. A quantity aspirated of more than 200 c.c. is quite suggestive of stagnation or of continued secre-

tion. A low acid value and the presence of blood suggest carcinoma while a high acid and blood suggest ulcer, although by no means pathognomonic. Microscopic examination may reveal blood, pus, yeast sarcinae or long bacilli. When obstruction of the stomach is suspected then a large full meat-free meal is given and aspirated at the end of seven hours. When no food is removed it may be definitely said that there is no obstruction of importance and this will often be of value in determining the necessity for operation. In examining the bowel movement one will not be satisfied to note the presence of blood, but determine if blood is in the center of the stool, indicating its origin as high up in the intestinal tract, is it free and bright, suggesting a lesion in the rectum or is it associated with pus and mucus, indicating an ulcerative process in or above the rectum. The consistency is noted, the odor, whether putrefactive or fermentative, size, caliber, whether normal or ribbon-like, the latter suggesting spasm or constriction in the sigmoid or rectum. Since the bowel movement is such a serviceable criterion for the condition of the colon, it should always be carefully and routinely examined. Microscopic and bacterologic examinations will be made routinely in all unformed specimens.

The x-ray examination should always be done where there is an indication of organic disturbances as evidenced by the history or by the presence of blood and pus in the gastric content or the stool. It, however, is often valueless and even harmful in diagnosis when the clinician is content to depend entirely upon the x-ray laboratory for a diagnosis. The roentgenologist, unless one highly skilled, can only state that there is or is not an organic lesion present. If no organic disease is demonstrated the clinician will then dismiss the gastro-intestinal tract but his patient continues on with the functional disorder still a definite disturbance. The harm coming from the x-ray perhaps need not be discussed except to refer to the pernicious influence and effect of poor reports by poor technicians. It has been my good fortune to be closely associated with excellent roentgenologists both in practice and teaching, the evidence of excellence being indicated by their desire to correlate all clinical, laboratory and x-ray findings before

drawing a final conclusion. They are true consultants.

Observation and Therapeutic Test-Out. When the clinical picture is confusing and the usual diagnostic procedures are not conclusive, the patient should be placed under careful observation for some time including definite control of meals, making frequent gastric and stool analyses and recording all distress. During this time if the patient has his usual distress, we must determine if relief is obtained by alkali, food or aspiration or is it materially affected by a large water enema. If the latter influences the pain and distress, a disorder of the colon may be suspected, if the former affords relief, then an ulcer is likely to be present. Gastroenterologists made use of these observations before the x-ray was in common use and we have found them to be of greatest value even today and continue them as routine practice. A diagnosis of ulcer is justified if these tests are positive in spite of negative x-ray and if the distress and symptoms are cleared after dietary measures are instituted we have very convincing evidence. Occult blood may regularly be present in the bowel movement and when all sources are excluded, we may have the only evidence of an early carcinoma. It has been pointed out numerous times that if the epigastric distress disappears after frequent feedings, a peptic ulcer is probably present. More accurate information may be obtained by giving not only frequent feedings but alkalies to completely neutralize the gastric juice and if the distress does not disappear or occult blood continues in the stool we are then dealing with a complication of an ulcer or an entirely different pathology. This information obtained from close observation will be of greatest help in correlating the other laboratory and x-ray findings; there must be no unexplainable incompatibilities. It must be obvious therefore that in diagnosis of diseases of the gastro-intestinal tract, careful attention must be given to all of the data obtained from the various procedures with special stress placed upon the information gained from an intelligently and carefully obtained history. The laboratory and x-ray methods are indispensable yet too often over valued. More accurately diagnosed and satisfactorily treated cases result if there was a

fuller appreciation of the disturbances resulting from functional as well as organic trouble.

Madame: Nora, have you seen my opera pumps?

Maid: No, mum, I ain't. Of course, it ain't none of my business, but how much do you get for pumping at the opera?

Society Proceedings

PIKE COUNTY

The July meeting of the Pike County Medical Society was held the 23rd at Pleasant Hill.

A bountiful repast of fried chicken and all the accompanying good things to be desired was served to us at the hotel.

The meeting was held in the parlors of the Baptist church with our new President, Dr. T. D. Kaylor of Parry, in the chair.

The meeting opened in the usual formal manner and all business was quickly disposed of.

The first paper on the program was given by Dr. R. O. Stites of Industry, Ill., on "Undulant Fever."

Dr. Stites is a man of rare ability. Practicing in a little town of 600 people and doing the original research work and study of undulant fever that he has, until he has definitely diagnosed 28 cases of that disease, seems remarkable.

There is probably no man in this country today better versed in undulant fever than is Dr. Stites. Too much cannot be said of the work of Dr. Stites, of his paper, nor of his coming the distance he did to give it to us, and bringing a very interesting case with him to present to the meeting.

His paper was fully descriptive of the disease in all its many phases and told also of the many ailments that have been unsuccessfully treated, treated under mistaken diagnoses when undulant fever finally proved to be the real cause of illness. Dr. Stites' success in this line is due to his indefatigable work and study of the disease, and the ferreting out of the large number of cases he has found, many of which were "old chronics," many of long standing.

His paper was received with acclaim by everyone present, as one of the best things that has ever been presented before the Society.

Dr. C. P. McRaven of Pittsfield led in the discussion of this paper, and in a very interesting way gave much from his personal encounter with the disease, its treatment, etc.

Others who discussed the paper were Drs. Andrae and Cunningham of Louisiana, Mo., Dr. Nelson of the State Department of Health, Springfield; Dr. Kuntz of Barry and Dr. Goodman of Pleasant Hill. In closing Dr. Stites answered many questions, and further elaborated on points of his paper.

Dr. Stites illustrated his paper with a number of charts.

The second paper on the program was a very graphic,

thoroughly scientific and complete one on carcinoma of the breast, given by Dr. Cunningham of Louisiana, Mo., in which he started with the embryological formation and structure of the breast, the different elements of structure of the mature breast, the directions and the tendencies to metastasis and giving the clinical symptoms, the points of differentiation between operable and inoperable cases, and seeing but little use in following the operation with x-rays.

This paper was indeed interesting and showed to us Dr. Cunningham as a young man of fine ability in his chosen field.

This paper was little discussed, as everyone felt the paper was complete and conclusive.

Dr. Hetherlin of Louisiana, Mo., gave the third paper on the program, on the importance of medicine and discovery, progress and achievement in human history. This scholarly paper provoked no discussion, called for none, was complete in itself and together with the preceding paper made us proud of our Louisiana friends and twice glad they could be with us as our guests and take part on the program.

A vote of thanks was tendered to all who took part in the program and to our hosts, Drs. J. E. Goodman and R. P. Wells of Pleasant Hill. An invitation to meet in Barry in October was accepted, and the meeting adjourned in due form.

F. N. Wells, Secretary.

Marriages

LEO GAMBURG, East Moline, Ill., to Miss Hinda Notarius of Chicago, August 2.

WALTER E. EISENBERG to Miss Ruth Bailis, both of Chicago, June 14.

WALTER COLFAX LOVEJOY, Maywood, Ill., to Miss Alma Salema Sheets of Greenfield, Ind., May 30.

News Notes

—Toxoid may now be had from the state department of public health instead of toxin-antitoxin for immunizing children against diphtheria. The department will continue to provide toxin-antitoxin to those who prefer this product.

—A series of scientific units dealing with specific diseases, constructed through the cooperation of the University of Illinois College of Medicine with the state department of health were a feature of the health exhibit at the Illinois State Fair, August 22-29, at Springfield. The subjects covered include tuberculosis, cancer, heart disease, diphtheria, pneumonia, typhoid fever and animal experimentation. Booths were

devoted to home and community sanitation, to milk, water, waste disposal, nutrition, ventilation, social hygiene and similar subjects. The state department of health also provided facilities for the physical examinations of babies and for the superficial medical examination of adults.

—Owing to general conditions, it has been deemed advisable to postpone the Chicago Graduate Course in Ophthalmology for one year. The present plans call for the beginning of the Course in September, 1932. Applications will be received by the Secretary, Dr. R. C. Gamble, 30 N. Michigan Ave., Chicago, Illinois, up to July 15, 1932.

—A state committee has been appointed by the state department of public health to combat the increasing prevalence of undulant fever. At its first meeting in Springfield, July 21, the committee authorized the appointment of subcommittees of three members each to represent the medical profession, cattle and swine breeders, milk distributors, dairymen, poultry and goat raisers, veterinarians and meat packers. The general committee will develop a practical program for the control of undulant fever in man and beast. The subcommittees will collect all available information relating to undulant fever from the point of view of the industry or profession represented and to suggest activities that would be practicable from the same standpoint; they will also constitute a medium for extending educational activities to the groups represented. The first case of undulant fever in man reported in the state was in 1928. In 1929 and 1930 there were, respectively, eighteen and sixty-three cases reported, while the first half of 1931 yielded seventy-seven cases. Deaths of six persons were attributed to undulant fever in Illinois during 1930. The members of the committee include Dr. Andy Hall, state health director, chairman; Robert Graham, D. V. M., professor of animal pathology and hygiene, University of Illinois, Urbana, vice-chairman; Dr. John J. McShane, state epidemiologist, secretary; Dr. Lloyd L. Arnold, professor of bacteriology and preventive medicine, University of Illinois College of Medicine; Dr. Hubert Houston, assistant state epidemiologist; Howard J. Shaughnessy, Ph.D., chief state bacteriologist; Dr. Randolph O. Stites, practicing physician, Industry, and William H. Welch, D. V. S., state veterinarian.

—Forty-eight dog heads were examined by the state diagnostic laboratory during the first twenty-eight days of July; thirteen of these heads were positive for rabies. In July, 1930, twenty-nine heads were examined, with four positive. According to the state health department, these statistics indicate that rabies is more prevalent this year. During July, the state department of health provided free Pasteur anti-rabic treatment to 37 people who had been bitten by dogs reputed to be rabid.

—A cancer clinic has been in operation for the last three months at Cook County Hospital. Through its work an effort will be made to correlate all the therapeutic measures of any importance in the treatment of cancer in an attempt to select the one best adapted to individual cases. A follow up of each patient is made. Space has been made available on the fifth floor of the hospital for this work, which will be carried on under the general supervision of the hospital and the Cook County Training School.

—A White House Conference on Child Health and Protection will be held at the Palmer House, October 30-31, with a view to giving widespread effect in the Chicago area to the "children's charter" adopted last year at the conference in Washington. It is planned to have five divisions; medical service, public health service, education and training, child welfare and community planning for child health and welfare.

Deaths

HENRY M. BASCOM, Peoria, Ill.; Hahnemann Medical College and Hospital, Chicago, 1873; a Fellow A. M. A.; chief surgeon Illinois Light and Power corporation and Illinois Terminal railroad system; formerly a practitioner in Ottawa for 36 years; aged 78; died July 4, in the St. Francis Hospital, of myocarditis.

OSKAR BRUN, Chicago; University of Basel Medical Faculty, Basel, Switzerland, 1879; aged 80; died, June 11, of myocarditis.

WILLIAM ALLEN DELONG, Bellevue, Ill.; Medical Department of Washington University, St. Louis, 1907; aged 51; died, July 14, of carcinoma.

FREDERICK J. DUDLEY, Decatur, Ill.; Chicago Homeopathic Medical College, 1894; a Fellow A. M. A.; on the staff of Decatur and Macon County Hospital; aged 73; died, August 3, of cerebral hemorrhage.

CLAUDE CLIFFORD HARRISON, Chicago; Hahnemann Medical College and Hospital, Chicago, 1921; a Fellow

A. M. A.; aged 39; died, July 21, of streptococcic septicemia.

THOMAS GREEN ISHERWOOD, West Chicago, Ill.; Rush Medical College, 1883; a Fellow A. M. A.; local surgeon for Chicago and Northwestern, Elgin, Joliet and Eastern and Chicago, Aurora and Elgin railway companies; member of American Association of Railway Surgeons; aged 74; died, July 19, from a ruptured aneurysm.

JOHN W. KELLY, Springfield, Ill.; Northwestern University Medical School, 1897; member of Sangamon County medical society; Fellow of American College of Surgeons; member of Illinois Gorgas Memorial Institute of Tropical and Preventive Medicine; aged 68; died, August 2, of complications following an operation for disease of a sinus.

FREDERICK R. KLEENE, Chicago; Rush Medical College, Chicago, 1887; member of Illinois State Medical Society; aged 68; died suddenly, July 25, of cardiac thrombosis.

CHARLES HOPKINS LONG, Chicago; McGill University Faculty of Medicine, Montreal, 1888; member of Illinois State Medical Society; aged 67; died, August 19, at Escanaba, Mich., of injuries received in an auto accident near Rexton, Mich.

WILLIAM STEELE MCCLANAHAN, Galesburg, Ill.; Rush Medical College, 1883; aged 74; died, August 1, of angina pectoris.

JOHN HANCOCK MCCLELLAN, Evanston, Ill.; Rush Medical College, 1911; a Fellow, A. M. A.; aged 55.

JOSEPH JAY MCGRORY, Chicago; Bennett Medical College, 1896; University of Illinois College of Medicine, 1908; member of Illinois State Medical Society; assistant clinical professor of surgery, Loyola University School of Medicine; aged 59; died, August 8, of diabetes, myocarditis and chronic nephritis.

WILLIAM ANTHONY POTTS, Lansing, Ill.; Milwaukee Medical College, 1908; member of Chicago Medical Society; aged 52; died, July 27.

GEORGE W. REZANKA, Oak Park, Ill.; Rush Medical College, 1893; member of Illinois State Medical Society; aged 62; died, August 21.

GEORGE T. ROWLAND, Martinsville, Ill.; Louisville, (Ky.) Medical College, 1876; aged 78; died, June 19, of heart disease.

ANNIE HUNGERFORD WHITE, Chicago; Hahnemann Medical College and Hospital, 1896; a practitioner for many years and one of the oldest members of the Chicago Woman's club; aged 84; died, August 20, of coronary thrombosis and arteriosclerosis.

DANIEL H. WILLIAMS, Chicago; Northwestern University Medical School, 1883; surgeon to South Side dispensary, 1884-1892; one of the founders of Provident Hospital and surgeon in chief, 1891-1893; later with Freedman's Hospital in Washington, D. C.; formerly associate surgeon at St. Luke's Hospital; aged 73; died, August 4, at Idlewild, Mich., of myocarditis.

SILVEY J. WILSON, Versailles, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; a former member of Illinois State Medical Society; died, July 21.

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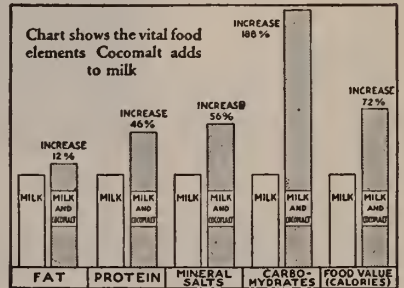
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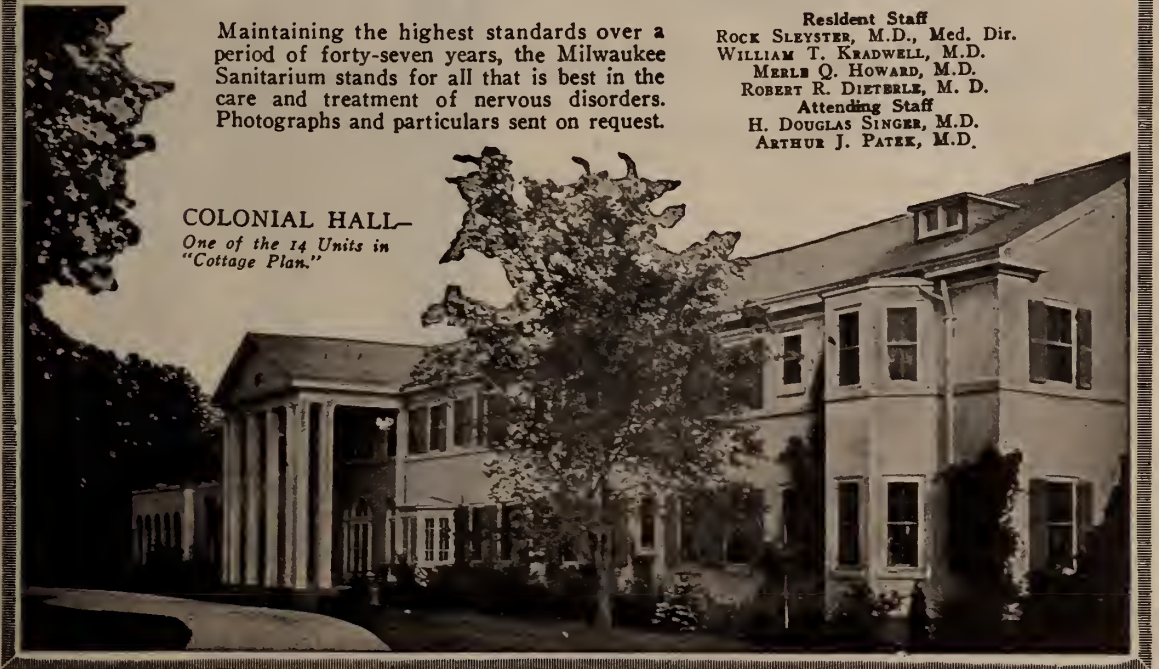
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Editorials

THE 1932 ANNUAL MEETING

Arrangements are now under way for the 1932 Annual Meeting to be held at Springfield on May 17, 18 and 19, 1932. For the first time since the Chicago meeting, all Sections will meet in the same building, and the Commercial and Scientific Exhibits will be under the same roof. The new Knights of Columbus Club Building will be turned over to the Illinois State Medical Society, including the club rooms, large swimming pool, and dining rooms. The Society is assured that the Knights of Columbus will do everything possible to make the stay of the members of the Society and the Guests as pleasant as possible.

The Abraham Lincoln Hotel, Springfield's newest and finest hotel, will be the general headquarters for the meeting, and the President's dinner will be given in that hostelry. The facilities are adequate at the Abraham Lincoln for a large attendance at this most interesting function. The Sangamon County Medical Society is already organized and, with Dr. Don Deal as Chairman of the Committee on Arrangements, the Society will again prove the most sanguine that they are to be the perfect hosts.

All hotel reservations should be made through the Hotel Committee of the Committee on Arrangements. Full particulars will be announced at an early date through the JOURNAL. Every member of the Illinois State Medical Society should keep the date of the meeting in mind and arrange to have a banner attendance at the State Capitol in 1932.

A. M. A. BUREAU OF ECONOMICS

The American Medical Association has recently, by action of the House of Delegates, created a Bureau on Medical Economics, with Dr. R. G. Leland as the Director of the Bureau. Dr. Leland is sending an interesting series of questionnaires to all County Medical Societies in the United States to get reliable information

for the Bureau which will be of inestimable value to all physicians. These schedules on Medical Economics should be looked over carefully, and the information given should be accurate, and the component Society Secretary should give them his immediate attention. The information should be thorough and reliable, as the data to be received by the schedule will be used to the best advantage of the medical profession of America.

We are informed that the first questionnaires sent out last year were answered by less than one-half of the Societies, and it is hoped that Illinois will be the first 100% State in the reports returned to the Bureau on Medical Economics. The schedules should not be laid aside, nor should they be filled out by the Secretary without careful study and conference with other members of the local Society. It would be an excellent plan to discuss them at a meeting, to get the views of as many members as possible. The Illinois State Medical Society has been intensely interested in the subject of Medical Economics for several years, and at the Annual Meeting held in Chicago in 1928 had an interesting symposium on the subject, which brought out some interesting discussions. The reply given to these questionnaires should be as early as may be consistent with thoroughness and accuracy.

CONVALESCENT SERUM FOR POLIO-MYELITIS

Dr. Andy Hall, Director of the State Department of Public Health, has recently announced that a supply of convalescent serum for the treatment of poliomyelitis is available through his department and can be procured on application at any time. It is of the utmost importance that the serum be given in the pre-paralysis stage in order that the greatest benefit is received.

Owing to the fact that the Capitol Building is not open on Sundays and Holidays, Dr. Hall has arranged with Engine House Number One of the Springfield Fire Department to keep a supply of convalescent serum in a refrigerator, where it can be procured at any time.

On night calls, where it is requested that serum be mailed to a physician, call Mrs. Nell Hall, telephone Capitol 4427. She will have a supply of serum on hand all ready to mail out and stamped with special delivery stamps, so that it

can be mailed out immediately after the call is received.

Some very interesting reports have been received from cases which have received the convalescent serum in the pre-paralysis stage, and Dr. Hall is very anxious that the physicians of Illinois understand this arrangement, so that there will be no delay in procuring and administering this valuable serum in cases of Infantile Paralysis.

Harold M. Camp, M. D.,
Secretary.

UNITED STATES IS NOT FIFTEENTH OR SEVENTEENTH IN MATERNAL DEATH RATE

SIR ARTHUR NEWSHOLME THE GREAT ENGLISH AUTHORITY STATES THAT DIFFERENT METHODS OF COMPUTING MATERNITY MORTALITY ARE EMPLOYED IN DIFFERENT COUNTRIES

The old shyster trick of "one measure for my grain and another for yours" is one of the best of weapons at the hands of those misinformed critics who attack the international comparative standing of the maternal mortality statistics of the United States. And that to the confounding of our country.

Those obsessed with the idea that in state medicine lies a panacea for all national ailments—physical, financial and psychical, material, commercial and artistic—point out continuously and in crescendo that the United States ranks only seventeenth best in the list of countries with reduced maternity mortality.

Those countries laboring under the burdens of health insurance and state medicine are cited fallaciously as illustrations of what such gag rule of medicine does towards increasing reduction of infant and maternal mortality. And yards and yards of garbled statistics are fetched forth by way of proof.

There is only one thing the matter with these statistics. There is only one little item that makes them basically fallacious. That is the item which makes this socialistic comparison even more odious than the general run of comparisons. And that item is that one set of standards is used to measure and to compute maternity mortality abroad, and another and an entirely different set of standards is employed in this country. As a matter of fact statistical computation is not precisely uniform in the various states, and

even the Federal government itself puts a few extra twists into state statistics when those reach Washington.

Russia, Italy and England are among the countries said to have a lower maternity mortality than the United States. Since 1915 statistics, figures and statements of any sort coming from Russia have need to be regarded with only half an eye and with far more than the traditional grain of salt. Italy has never made public the exact method of procedure for the collection of any of her statistics. Great Britain is probably the most understandable and above board, but even in the sister English-speaking domain there is a definite difference in classification as to what on the death certificate means a demise in childbirth because of a parturition accident or result; or a demise in childbirth from some previous ailment or condition that is aggravated by the mechanics of parturition.

The same old tale you see of gross weight, net weight, or excess baggage if the matter is viewed with a commercial eye.

In other words a pound of package oatmeal may be a pound of oatmeal in a package or it may be a pound package of oatmeal.

That the simile is homely makes it none the less accurate. The United States does not follow the same tabulation method of its statistics as does any other nation, nor is there indeed any one set uniform system. If such a system were ever evolved without doubt the United States would lead the list in rate of low maternity death rate, as it does in other beneficent statistics.

This apparently bold statement is made from the genesis of living standards in this country.

The poorest immigrant can find for herself and her family far better prenatal care, from the point of sanitation on, than is found in the continent. If nothing else is cited let the difference in nutritional values be taken into account. Peasant black bread and wine or beer possess a life sustaining content, but can it for a second compare with the balanced food ration known in the home of even recent dwellers in America?

Before comparative statistics can be statistical and comparative there must be some greatest common denominator of census taking whereby statistics submitted for comparison have all been secured, arranged and classified and computed by the same yardstick or rule of thumb.

Since at present there exists complete lack of

uniformity in the method of gathering maternal mortality statistics or any other statistics, death rates in different countries cannot be compared with the slightest degree of accuracy. It is like measuring milk by the quart in one hand and by a yardstick with the other.

In Russia the state sanctioned practice of abortion, a factor absent from the death rates of any nation. Between the United States and England, all countries in fact, the methods of census taking differ radically. The United States Census Bureau uses the blanket term of "puerperal state."

This means a death during pregnancy, confinement or period of nursing, or a death occurring within three months of the cessation of any of these functions. In Great Britain, so keenly are the differential distinctions and classifications drawn, that there can be no possible comparison with statistics as set up by the United States. The A. M. A., recognizing this, made a chart (posted at the Atlantic City, N. J., convention of that body some years ago), and captioned "International Incomparability of Mortality Statistics." The Massachusetts Medical Society in 1921 issued a statement deploring the receptiveness with which medical writers almost universally express and maintain an inferiority complex toward the obstetrical situation in the United States by a sheeplike acceptance of foreign statistics, culled under conditions far removed and actually incomparable with conditions for census taking in the United States.

This unscientific, aye, unmathematical, attitude towards these comparative statistics has been commented on officially by the United States government in that section of the Bureau of Census where it is reported:

"As already pointed out, the classification of deaths from puerperal causes differs greatly in different countries. Higher rates in one country than in another, therefore, do not necessarily mean higher mortality from these causes. However, as classification in a given country presumably differs but little from year to year, the rates do presumably serve as useful measures of mortality from these causes with the country itself." And again:

"If every State had had good birth and death registration since 1900 a satisfactory answer to this question would be possible, based on death rates from puerperal causes per 1,000 births, but

as the birth registration area was not established until 1915, and then included but 10 states and the District of Columbia, it is possible to show only a few such rates for a few years, and it must be borne in mind that even then rates were too high whenever birth registration was incomplete.

"To the query 'How do the death rates from puerperal causes per 1,000 live births in the birth registration area of the United States compare with the rates in foreign countries?' the answer must be that here again is a question of the greatest interest and importance which cannot be answered satisfactorily both because of lack of data in this country and because there is no certainty that all deaths from these causes are classified in the same way in the various countries."

Now these contentions from American physicians are receiving confirmatory support from distinguished medical and scientific statisticians elsewhere. For example, Sir Arthur Newsholme, former chief medical officer of the Local Government Board of England and Wales and a distinguished worker in the field of public health, conducted a comprehensive investigation under the auspices of the Milbank Memorial Fund in several countries of Europe, the results of which are included in the first volume of "International Studies on the Relation Between the Private and Official Practice of Medicine." The studies undertaken deal with medical care of the poor, sickness insurance, hospital organization, midwifery service, the statistics of maternal mortality, the treatment of tuberculosis and of venereal diseases and other conditions.

Concerning the statistics of maternal mortality Sir Arthur states that different methods of computing maternity mortality are employed in different countries and expresses the belief that international comparisons are undependable. In practically all other countries he notes a complicating cause of death occurring in the parturient woman is given preference in the death certificate while in the United States childbirth would be given as the cause of death and the complication a contributing cause. In pointing out the discrepancy in comparing statistics of the United States with those of other countries Sir Arthur says "Had England followed this practice (that used in the United States) the deaths officially ascribed to parturition would have been increased by ninety-six influenza deaths in 1925, while in

1918 the puerperal deaths would have been increased by 1,638."

Life for life, day by day, the general death rate in the United States is distinctly lower than that in practically all of the European countries except the Netherlands where people apparently rarely die from any cause whatever. (The published death rate is frequently under 10 per 1,000 population per year.) In 1929, for example, the deaths per 1,000 population reported by half a dozen European countries and by the United States were as follows: England and Wales, 14.5; Netherlands, 10.7; Switzerland, 12.5; Poland, 17.00; Hungary, 17.5; France, 16.5; Germany, 12.6; United States, 11.9. Netherlands is the only country in this group which experienced a rate anything like as favorable as that which prevailed in the United States. Why then lay all the dead of America at the door of the delivery room.

In the second place, the practice of specifying the cause of mortality and of classifying death certificates according to cause varies significantly not only in different nations but in different political units within each country. An illustration of this fact is the percentage of deaths attributed to "unknown" causes and to "old age" in the different countries. Out of a dozen leading nations only four reported in 1927 anything like as low a ratio of deaths from "unknown causes" as did the United States. These 12 countries with the death rate per 100,000 reported as of "unknown" causes and from "old age" in 1927 were as shown in the table:

DEATHS PER 100,000, 1927		
Cause specified as:	"Unknown"	"Old Age"
Belgium	57	144
Denmark	23	151
Finland	72	74
France	171	219
Germany	4	129
Hungary	180	256
Netherlands	17	52
Norway	58	147
Sweden	26	177
Switzerland	13	44
England and Wales.....	3	58
United States	17	11
Illinois	3	5

"Unknown" of course is a debatable and slipshod term and a generic alibi. Yet in the 1910 death registration area of the United States, and embracing practically two-thirds of the population, the death rate per 100,000 ascribed to "Unknown Causes" in the United States in 1917 was only three. American physicians are conscien-

tious in seeking to establish causes of death and honest enough to inscribe these causes in the records and that rate of "three unknown" is lowest of all other countries save one!

Birth registration in the United States is far more lax than in Europe—admittedly at least ten per cent. off. The statistical trend in this country however is to treat maternal mortality now as once was done with old age or "senility deaths."

More recently the medical profession in this country discovered that old age in itself carries off very few people so a more probable cause is sought and usually found. A diseased condition may often prove fatal in an aged person which would be but a trifling illness in the young. Conversely the aged might reasonably be expected to live longer except for the results of such an attack. Thus it seems more logical to ascribe such fatalities to a specific disease although the condition of senility is a factor. It would be just as logical to ascribe to infancy a death of a baby from pneumonia.

An international list of causes of mortality all the leading nations of the world have adopted. Of this the purpose was and is to bring about uniformity of classifying deaths as to cause. Nature is ever prolific in vagaries. Numerous factors which tend toward a fatal outcome are frequently involved. Thus a pregnant woman might conceivably require an operation for appendicitis and then succumb to a post-operative pneumonia. All these factors should be recorded on the death certificate which then presents nice questions for the statistician to decide. To make uniform the classification of such deaths each nation has drawn up a set of rules, which express its interpretation of the international list, for classifying these deaths due to joint or multiple causes.

In the United States practically all deaths associated in any direct way with childbirth or the puerperal state are charged against those conditions. This is in keeping with the rule of the United States Bureau of the Census, which instructs the statistician who classifies death certificates to:

"Prefer puerperal causes except when a serious disease (*e. g.*, cancer, chronic Brights' disease) was the independent cause."

Application of this rule brings into the classification of maternal mortality, due to puerperal

causes, many deaths which in other countries are ascribed to other causes.

Rule 3 of the French instructions to statisticians, for example, says:

"If one of the diseases is *epidemic* and the other is not, choose the epidemic disease."

Likewise Rule 3 of the German code reads:

"With an infectious disease and a non-infectious disease, the former should be chosen."

A rule in the English code of instructions explains that

"Any general disease (except pyrexia, premature birth, congenital defects, want of breast milk, teething and chronic rheumatism) to be taken in preference to any local disease except aneurysm and strangulated hernia."

Manifestly the use of these rules make for a considerable difference in the practice of classifying deaths. This would account for an apparently excessive death rate in any one country from any given cause. The United States takes the position that the "puerperal state" is the underlying or primary cause of death in the majority of cases where it is involved.

The official bulletin of the State Department of Public Health at Springfield, Illinois, publishes this encouraging table for at least one state:

BIG DROP IN MATERNAL MORTALITY

Loss of life due to the complication of childbirth was distinctly lower in Illinois last year than in 1929. In actual number the fatalities fell from 818 in 1929 to 693 in 1930, a decline of 125. The maternal death rate per 1,000 births dropped from 6.3 in 1929 to 5.4 in 1930. Improvement down-State and in Chicago was almost the same in volume.

MATERNAL DEATHS PER 1,000 BIRTHS

	1930		1929	
	Deaths	Rate	Deaths	Rate
Illinois	693	5.4	818	6.3
Chicago	298	5.1	359	6.1
Down-State	395	5.6	459	6.5

The maternal death rate for 1930 is one of the lowest on record in Illinois. Prior to 1922 the rate was rarely below 6 per 1,000 births and it was usually above 7. In 1922 the rate was 5.8 and it has been below 6 each succeeding year except for 1926 and 1929 when the rate was 6.0 and 6.3, respectively. The rate was 5.1 in 1927 and also in 1928. Those two years marked the lowest rate on record.

Calculated upon the basis of 100,000 female

population of same age, the highest maternal death rate, 49 per 100,000, prevailed in 1930 in Illinois among women in the 25 to 34 age group. The next highest rate, 40, prevailed among the 20 to 24 age group. In the 35 to 44 age group the rate was 30 and in the 15 to 19 age group it was 20. It is probable that the complexion of these rates would change significantly if they were calculated upon the basis births among each age group. Data are not available for computing such rates.

NOISE RETARDS APPRECIABLY THE RECOVERY OF SICK PATIENTS

Along with insistent claims as to the value of music and the harmonics generally as assisting therapeutic agents, contention is made that raucous and dissonant noises form deterrents to recovery from various illnesses; that such discords are a positive incentive to crime, and certain engenderers of numerous nervous afflictions.

Merits of quiet as an aid to convalescence have long been recognized. This therapy of repose and calm is both ancient and wise. Now to the sins of the city streets, statisticians append the transgressions of their racket and din.

The Noise Abatement Commission of New York City reports in a recent survey that

"Eighty per cent. of the hospitals in New York City are surrounded by noise sufficient to retard appreciably the recovery of patients. In almost half the hospitals included in the survey noise was found to have a really serious effect on the health of patients. In others, its effect was described as either important or annoying.

"Traffic noises, especially those made by heavy trucks, head the list of complaints. Second comes the noise made by children playing. Fire apparatus, street cars, low flying airplanes, ash and garbage collection, shots [in Manhattan] and church bells [in Brooklyn] and the omnipresent radio are other causes of noise, disturbing not only to patients in hospitals but to doctors and nurses as well.

"These figures indicate an extremely grave situation of emergency which must be immediately remedied as far as is possible under present laws by the agencies in whose hands is the enforcement of these laws," the report says. "One of the most vital functions of the city is to take adequate care of its sick. It is essential that hospitals be surrounded with almost perfect con-

ditions of silence. How far from perfect conditions are is startlingly indicated by the figures quoted above.

"Many superintendents pointed out that the noise conditions have a detrimental effect on the patients and interfere also with the health and efficiency of doctors and nurses, thus making them less able to give the patients the best possible care. As has been shown by previous studies noise that has a serious effect on the sick has a detrimental effect upon the healthy. Many well people will be forced into hospitals by the same noise that will hinder their recovery when in institutions. The situation is grave for those already sick and serious for those who are well."

Actual statistics are lacking to indicate the ratio of noise as a contributive factor to crime. Certainly many crimes committed in a nervous frenzy may well cede to unseemly rackets a certain basic responsibility. Bad as are clangor and din on boulevards in the slums and even in the debatable districts, noise is of itself a crime.

Commenting in this regard the *United States Daily* remarks:

"Every day we pick up the newspapers to read of sensational crimes. A shopkeeper is standing at his counter when a pair of nice looking young men come in and ask him for something that is on the shelf behind him. When the shopkeeper turns his back, one of the young men pulls a gun and commands him to 'Stick 'em up.' If he shows fight, there is a tussle and sometimes the sounds of shots.

"The police sirens are heard in the streets, detectives and reporters gather at the scene of the crime and the wheels of justice begin to grind. Finally, the criminals are caught.

"The boys go to court, are convicted and spend long years in prison if they escape the chair. In any case, their lives are finished. This sad story is told over and over again on the streets of New York City. There was a time when the prevention of crime was thought of in terms of punishment; heavy sentences would, it was thought, frighten future criminals into being good. But unfortunately, this did not work. It was found that there was something in the young boys who went wrong which kept them from being good; which made them go ahead and take the risk despite of everything so that they, too, committed

crimes and the prisons became more and more crowded.

"So a new theory of crime prevention was developed. Expert psychologists and social workers began to study what it was in a boy that made him a criminal despite of everything.

"Every possible cause of crime is being studied in this city. None is so small that it may be overlooked with safety. All must be removed. It has been found that criminals have been made by prohibition, by maladjustments in school and by bad street companions. And the Noise Abatement Commission has added to the findings of other scientists the fact that the noise of the clamorous city creates a fear psychology that makes for crime.

"I am not contending that noise makes criminals. But I do insist that a boy who has lived all his life under the shadow of a rumbling and howling elevated, who has had clamorous trucks and radio loudspeakers as his perpetual childhood companions, who could not imagine what real silence means; I do contend that such a boy is more likely to be a criminal because of the noise that has bombarded his ear drums ever since he was born."

MEDICAL MOTION PICTURE FILMS

The Educational and Scientific Service Committees offer the following information about films suitable to show at scientific meetings of county medical societies.

Davis & Geck, Inc., 217 Duffield Street, Brooklyn, New York, have three films available for bookings without charge to professional organizations. Each is in four reels and is obtainable in either the 16 or 35 millimeter width and requires about forty-five minutes for showing. Requests for bookings or information should be addressed to Davis & Geck, Inc.

"The Relation of Absorbable Sutures to Wound Healing."

"Surgical Treatment of Peptic Ulcers."

"Traumatic Surgery of the Extremities."

The Petrolagar Laboratories offer to send their staff men to show the following films which are 16 millimeter in width, about 400 feet in length, and require twenty minutes for projection:

"Movements of the Alimentary Tract in Experimental Animals."

"The Influence of Drugs on Gastro-Intestinal Motility."

"The Anatomy of the Abdominal Wall."

"The Story of Cholecystokinin."

"A High Posterior Gastroenterostomy."

"Emergency Operations—Liver-Stab Wound and Bullet Wound in the Bladder."

"Multiple Diverticula of the Bladder."

"Hydrocele."

"Appendectomy."

"Colles Fracture."

"The Anatomy of the Abdominal Viscera."

"The Thirteenth International Congress of Physiologists."

Requests for these films should be made with the Petrolagar Laboratories, 536 Lake Shore Drive, Chicago and three weeks' notice given whenever possible.

The American College of Surgeons has approved the following films, inquiries concerning rental or purchase of which should be directed to the Eastman Teaching Films, Inc., Rochester, N. Y.:

Film	No. Reels	Rental Prices		Sale Prices	
		16 mm.	35 mm.	16 mm.	35 mm.
Diagnosis and Treatment of Infections of the Hand.....	3	\$ 15.00	\$ 40.00	\$125.00	\$250.00
*Intestinal Peristalsis.	1	5.00	....	30.00	....
Simple Goiter	1	7.50	18.00	50.00	100.00
Benign Prostatic Hypertrophy	1	7.50	18.00	50.00	100.00
†Indirect Inguinal Hernia	3	20.00	45.00	140.00	275.00
†Indirect Inguinal Hernia	2	15.00	35.00	95.00	190.00
†Indirect Inguinal Hernia	1	7.50	18.00	50.00	100.00
The Technique of Blood Transfusion...	2	15.00	35.00	95.00	190.00
Ectopic Heart.....	1	7.50	18.00	50.00	100.00
The Treatment of a Normal Breech Presentation	2	15.00	35.00	95.00	190.00
Acute Appendicitis (Professional)	2	15.00	35.00	95.00	190.00
Acute Appendicitis (Lay Public).....	1	7.50	18.00	50.00	100.00
Development of the Fertilized Rabbit's Ovum	1	7.50	18.00	50.00	100.00
Tests of Vestibular Function	1	7.50	18.00	50.00	100.00
*Amyotonia Congenita	1	3.75	....	25.00	....

*There are no 35 millimeter prints of these films.

†Since each reel of this picture is complete in itself, any one of them or any combination of them can be used to advantage. Subject matter of the three reels: Reel 1—Anatomical Aspect of Hernia; Reel 2—Clinical Aspect of Hernia; Reel 3—Operative Technique of Hernia.

The Alumni Motion Picture Foundation of the Chicago Lying-In Hospital and Dispensary, 5841 Maryland Avenue, Chicago offers the following

films which have been produced by Doctor J. B. DeLee:

1. Forceps Film—giving the history of forceps, the indications for the operation, the low forceps and forceps in occiput posterior position. (4 reels 35 mm. film) (4 reels 16 mm. film).

2. The Treatment of Face Presentation—showing the method of conversion to occiput presentation with forceps in deep transverse arrest, and then a case of Face Presentation which terminates spontaneously. (4 reels 35 mm. film) (4 reels 16 mm. film).

3. Craniotomy on the Dead Child. (3 reels 35 mm. film) (3 reels 16 mm. film).

4. The Prevention and Treatment of Eclampsia—showing the prenatal care of the toxemias of pregnancy, the treatment of actual eclampsia and 2 patients having convulsions and autopsy findings in 1 case. (3 reels 35 mm. film) (3 reels 16 mm. film).

5. Injuries of the Newborn—showing cephalhematoma, fractures, etc., with treatment of same. (2 reels 16 mm. film.)

Laparotrachelotomy or Low, Cervical Cesarean Section—giving the history of the operation, surgical operating room technic, local anesthesia, the operation itself, the variants had complications usually met and post-partum care. (8 reels 35 mm. film.)

*N. B.—A rental charge of \$2.50 per reel for the 16 mm. size, and \$5.00 per reel for the 35 mm. size is made, plus transportation charges both ways.

THE UNIT OF OUR EXISTENCE IS THE COUNTY MEDICAL SOCIETY

Dr. Harry M. Hall, former president of the West Virginia Medical Association, offers the following as to the future outlook of medicine. We quote:

"Medical societies, we think, are going to pass through a rapid metamorphosis in the next five years, and, in the end, they will either be one of the strongest aggregations of determined men ever gathering together in a single human endeavor or they will be nothing but a name. We will all have to see that this is what civilization is leading us to, ourselves, or outside forces quite beyond our control are going to make us realize

it. From a number of courses the individual integrity of a medical society is going to have its structure tested—the unit of our very existence is the county medical society. . . ."

Correspondence

I HAVE NEVER GIVEN ENDORSEMENT TO ANY COLLECTION AGENCY

September 26, 1931.

Dear Doctor Whalen:

Some time ago I had a caller in my office trying to interest me in an "unusual" method of collecting bad accounts. The method in this case was for the Agency to take the account, get a note from the debtor, and then discounting it 20% pay the physician immediately. I was asked to make an investigation through suggested sources, as to the reliability of the concern. I did not follow instructions, but did make investigations through our own local Chamber of Commerce, and as the information received in this way did not correspond to the claims of the salesman, I failed to sign a contract.

My attention has been called to the fact that a representative of this concern is now showing to prospective clients, what is claimed to be copies of telegrams sent by myself, and the replies received relative to the standing and reliability of this company.

I hereby wish to state that I did not send any telegrams, nor did I receive any relative to this or any other similar company, and any statements made to prospective clients that I have heartily endorsed any collection agency are entirely false.

I am prompted to issue this warning because one of my good friends in another part of this state was shown such a telegram, stating that I recommend the concern to my friends, and on the strength of this alleged endorsement the friend signed a contract. He now states that the company has collected funds from debtors, and has failed to remit to him the amount due. My experience with Collection Agencies has been disappointing, and I have never yet given an endorsement to any of them, so any statements to the contrary are entirely untrue.

HAROLD M. CAMP.

EFFICIENT MEDICAL SERVICE FOR THE SO-CALLED MIDDLE CLASS PATIENTS

Chicago, Sept. 24, 1931.

To the Editor:

Your many constructive editorials on the economics of medicine which have appeared regularly in the *JOURNAL*, prompts me to send you the following contribution for publication. I am sending it in the hope that my article will throw some additional light on the perplexing problem of giving efficient medical service to the so-called middle class at a cost in conformity with their limited income.

In the last thirty years medical progress has been so nearly miraculous as to partake of the incredible.

To acquaint the laity with selective discretionary power towards the use and possession of this medical knowledge is a difficult and a delicate, yet a pre-emptive and imperative duty. One handicap stands rooted in economics.

Expense and efficiency to a large extent go hand in hand. Increasing costs wait upon knowledge as good digestion waits upon appetite.

Modern medicine insists upon complicated examination with expensive apparatus, and often the assistance of expensive specialists as a preliminary to diagnosis with attendant increasing costs that become too big a burden to pass to people of small incomes. In a government survey of several hundred thousand wage earners, it is shown that 80 per cent. earn less than \$2,000 annually. Surveys by the "committee on cost of medical care" show that about 20 per cent. of the cost is represented by the doctor's fee and that 80 per cent. goes to institutions both scientific or lay, and lay persons for services and supply.

The medical man's inability to control this 80 per cent. outlay has resulted in those mounting costs that give rise to the development of free and low price clinics for treatment. These clinics when under lay control are a boomerang to scientific medicine and ultimately will destroy medical progress. All medical dispensation should come from medical hands and even in the unavoidable lay angles should be under medical control.

With medical progress producing possible clinic demand there have developed medical organizations and corporations controlled by lay people, with money furnished by endowment,

philanthropy or taxes. Originally such lay-medico units were places where medical services were dispensed free to the deserving poor. But these same units appear now as great organizations able to spend millions of dollars a year upon engendered costs other than medical services. Generally speaking, doctors devote their time to these clinics without pay just as clinics lacking lay control are all at the expense of individual doctors. These lay-medico organizations have had their greatest growth during the last ten years. Outstanding examples include a much advertised lay public health institute and the University of Chicago clinics. This institute attracts its patients by advertising but limits its work to venereals. It is organized as a so-called "Not for Profit" organization. The University of Chicago is a pay clinic organized to provide all types of medical care for people of small means. More recently medical men have complained that it is treating people able to pay the regular fee of physicians. These organizations as well as others studied are owned and controlled by lay people who are not medical minded and not properly sympathetic to the general practitioner. These corporations give as their excuse for existence the inability of patients from low income groups to pay for continuous or specialized care.

In addition to "Not for Profit" organizations, as they term themselves, one must mention numerous and increasing industrial, religious and insurance organizations that are administering medical services to their members, employees or policy holders. Something must be done to straighten out this clinic crisis. One group of medical men meeting to evolve some plan of co-operation that would provide a service for these low income groups, and protect the profession at the same time, were appalled at the situation's intricacies. So surveys were made of many types of medical organizations, both industrial, insurance and hospital, and ordinary dispensary units. This work was carried on by physicians deeply aroused in this problem.

Out of the different organizations studied, a series of ideas were evolved. It seemed as though any effort to provide medical care for people of small incomes with adequate protection to the medical profession must have as a background the co-operation of the whole profession.

Certainly the efforts made by the County So-

ciety to control the further development of lay organizations entering the business of medicine have met with little success. Consideration of the reasons for failure to control and limit these lay efforts seemed to indicate that all argument was lost because medicine had failed to provide a service for these people of small means. This left the door open for the development of the organizations.

After much thought it was believed that if the County Society would form or endorse an organization from its membership that a way would be found to provide adequate medical care with protection to the profession.

An organization so formed under the scrutiny and supervision of the County Society could invite the participation of all doctors with the understanding that all savings effected would be available to their patients, and that profits, if any, over and above the cost of further developments would be divided among all doctors participating.

Could such an organization, if authorized, choke off further similar activities by lay organizations?

Could approval be given a corporation formed by doctors with the understanding that participation would be open to all doctors?

Objections to corporate medicine, suggested partnerships. Scrutiny of the pitfalls of partnership make corporate medicine seem better. Objection to an educational program as carried on by purchased publicity, might be met with the statement that there can be no ethical objection to dignified education even if paid for, when carried on by an organization representing all the doctors. Paid publicity might help to develop and control public opinion and interest in medicine, with benefit to the medical profession and the general public welfare. Paid educational publicity might control and prevent charlatanism, quackery, fraudulent cults, patent nostrums, etc. More important, it might do much to make the public "health conscious" thereby stimulating preventive medicine, constantly influencing the public to consult and advise with the medical profession on all matters pertaining to the treatment and prevention of disease.

Many may think an endorsed low cost clinic is dangerous, and might take patients from regular physicians. Such service, though perfect medically but completely impersonal, would encourage

people able to pay, to consult their family doctor. Some suggest that the patient be known by number instead of by name and that the clinics be accessible but not luxurious. Income level, or limit of those to be served by the clinic, might be fixed and set at certain limits referring all others back to the family physician. This income level, controlled and fixed, would be a decided improvement over present clinics run by lay people who make superficial or no investigation of the patient's ability to pay the private physician. If such a medically owned clinic should ever be formed all employed medical men should devote their entire time to the work and adequate salaries be paid them. Further, this could be supplemented by consultants in the various departments at part time but with financial return. Such a medically owned corporation should be organized for profit and all or as many doctors as desire should participate. Profits, if any, over and above the amounts for further development, should be returned to the stockholders in the same way that profits are divided in any corporation.

These ideas and many others too numerous for this letter, have been gone over in great detail, always with the thought of delivery of adequate medical services to all people with protection to the medical profession. Any effort endorsed by the medical profession must carry out certain definite objective outlined as follows:

1. Hold the practice for the benefit of the people and the medical men.

2. It must bring the control of organized or corporate medicine back under the control of the medical profession organized for this purpose.

3. It must develop and operate a medical organization for the purpose of furnishing all medical service to the people of small incomes within their ability to pay.

4. It must obtain adequate remuneration for all men qualified to act as doctors, employed by all organizations, with due regard as to their value and the organization's ability easily to pay the same.

5. It must promote association and co-operation with existing medical organizations and protect all charitable service for those who are unable to pay.

6. It must use all existing medical organizations without adding to them unless absolutely necessary, by demands of patients for facilities

greater than those that are available or do not exist.

7. It must decrease the cost of medical service apart from the physician's fee to higher income groups served by the physicians in their individual practice of medicine.

8. It must make available to all patients of doctors in individual practice, all drugs, supplies and sundries ordered by the doctor at low cost, thus decreasing his patient's total cost of medical service.

9. It must make available all costly facilities developed by the organization in the way of laboratories, x-ray, radium, etc., to all doctors at the same cost as is charged the low income groups.

10. It should make accessible all other cost saving facilities for the benefit of all physicians in their purchase of supplies and equipment.

11. It should assist the doctor in his individual practice through making available to him inexpensive and complete consultation and diagnostics service to people of small incomes.

12. It should make hospital facilities available to patients of all doctors, enabling them to treat them under their own direct care and supervision and at the same time have the advantage of calling upon the hospital consultation service for such advice when necessary, without extra charge, in relation to specified low income groups.

13. It must provide a loan service that will enable the patient to pay his bill promptly and not increase the cost of medical service to the patient.

14. It must make available all the advantages of a low cost organization to all doctors, whether participating members in the organization or not.

15. It will distribute the results of profitable management, above the costs of operation and further developments necessary, among all the doctors participating.

This plan is offered for a discussion and action by the medical profession. It is a plan not competitive with the doctor in his individual practice. It would aim to County Medical Society control over the development of medical organizations and the character of the paid educational publicity. It offers constructive ideas to the furnishing of a low cost medical service to the

people with full protection to the medical profession.

CHARLES R. WILEY, M. D.

MECHANISM OF EDEMA IN RELATION TO CLINICAL CLASSIFICATION OF BRIGHT'S DISEASE (NEPHRITIS)

Henry A. Christian, Boston (*Journal A. M. A.*, Aug. 1, 1931), has found edema a very useful basis of classification of Bright's Disease along with a time division into acute, subacute and chronic. Using these criteria he has formed a clinical classification that has been very helpful. Properly to apply edema as one of the criteria of classification of Bright's disease or nephritis necessitates a reasonable understanding of the pathologic physiology of edema, and although the mechanism of edema is very complex and as yet far from thoroughly understood, recent investigation carried on in many different laboratories has added much to the knowledge of it, so that one is in a position so to formulate this knowledge as to aid in an understanding of the several types of Bright's disease. It is obvious that edema or the appearance of abnormal amounts of fluid in tissues and body cavities does not arise always from the same cause or, so to speak, does not always have the same mechanism. This permits one to subdivide edema into seven clinical varieties: cardiac, hepatic, renal, nutritional, anemic, inflammatory and anaphylactic edema. Of these varieties of edema, cardiac and hepatic edema have a very similar mechanism; in the same way renal, nutritional and anemic edemas are closely related as are inflammatory and anaphylactic edemas. In the mechanism of these several varieties of edema there are concerned six significant factors: filtration pressure, osmotic pressure, permeability of vessel wall, salt content of the tissues, lymphatic drainage and nervous control. The exact part played by each factor is not fully understood as yet, and, when they act in various combinations, great complexity may enter into the process. However, a reasonable understanding of the mechanism of edema may be obtained by analysis of the action of some of these factors in a somewhat schematic way. This relatively simple clinical classification is a practical, easily applied and useful grouping of patients with Bright's disease. Almost every patient can be placed properly in the classification after relatively simple clinical study. Hence the author commends its use.

CLINICAL STUDY OF ASCARIASIS

A. E. Keller, Horton Casparis and W. S. Leathers, Nashville, Tenn. (*Journal A. M. A.*, Aug. 1, 1931), studied the clinical conditions found in 107 cases of ascariasis in white children and in 60 cases in Negro children, with 54 white controls and 69 Negro controls. A history of disturbed sleep was obtained in 60 per cent. of the cases in white children and in only 15 per cent. of the white controls, while in only 20 per cent. of the Negro patients and 22 per cent. of the Negro controls was this complaint present. Abdominal

discomfort was present in 70 per cent. of the white patients and in only 7.4 per cent. of the white controls. It was present in 60 per cent. of the Negro patients and 30 per cent. of the Negro controls. The physical conditions were those which can be demonstrated in any average group of rural children. Protruberance of the abdomen was present in 60 per cent. of the white patients and in 22.2 per cent. of the white controls. It was present in 33.3 per cent. of the Negro patients and in 23.3 per cent. of the Negro controls. There were no significant changes in the total red blood cell counts, hemoglobin or total leukocyte counts in the cases and controls as groups. The differential leukocyte counts revealed an average eosinophilia of 8.9 per cent. for the white patients and 5.3 per cent. for the Negro patients. Both white and Negro controls had eosinophil counts which varied from zero to 10.5 per cent. The average eosinophil count, however, for both control groups was 2.9 per cent., which is considered normal. The eosinophilia does not appear onstantly in cases of ascariasis, 16 per cent. of the white patients and 31.6 per cent. of the Negro patients showing an eosinophil count of 3 per cent. or less. No definite correlation between eosinophilia and the intensity of infestation could be demonstrated. No correlation between the age of the patient and eosinophilia could be shown. This analysis presents a few observations on which a clinical diagnosis of ascariasis may be based. The parasite causes abdominal discomfort and disturbed sleep. That the parasite causes some disturbance in the host is seen by the presence of eosinophilia. The negative clinical observations that are presented emphasize the importance of the routine examination of feces in a diagnosis of ascariasis.

AVITAMINOSIS: III. SPECIFIC EFFECT OF VITAMIN B ON GROWTH AND LIPID METABOLISM: LIPEMIA AS SYMPTOM COMPLEX IN THIS AVITAMINOSIS

For the past four years Barnett Sure and Margaret Elizabeth Smith, Fayetteville, Ark. (*Journal A. M. A.*, Aug. 1, 1931), have been searching for a symptom complex in vitamin B deficiency as may be evidenced by the blood chemistry picture. Their results, however, were, in the main, negative. They have considered of little clinical importance the anhydremia and the increase in the nonsugar reducing substances of the blood, which were frequently encountered. They feel, however, that their present observations may serve as an aid to the diagnostician, since they indicate the presence of a marked lipemia, i. e., a large increase in the concentration of lecithins, fatty acids and the iodine number of the fatty acids, indicating unsaturation, in lactating mothers and nursing young and also in weaned animals, in this avitaminosis. Since there has been no definite yardstick by which to measure vitamin B deficiency from the standpoint of chemical analysis of the blood, as, for instance, the low phosphorous concentration in the case of rickets, it has been difficult to diagnose, positively, borderline cases of vitamin B deficiency as it exists in the United States; and it is

hoped that a chemical study of the lipids of the blood will prove helpful to the clinician as a guide in vitamin B therapy, particularly in infant nutrition, in which anorexia is a common symptom complex.

TREATMENT OF CHOREA BY INDUCTION OF FEVER

Lucy Porter Sutton, New York (*Journal A. M. A.*, Aug. 1, 1931), has treated twenty-four choreatic patients with intravenous injections of typhoid-paratyphoid vaccine as a means of producing fever. The results thus far have been good. There has been prompt cessation of the symptoms, and the course of the disease has seemed to be greatly shortened. In the cases reported the average duration after treatment was started was from eight to nine days. This treatment has been much more satisfactory than any other used at Bellevue Hospital on the Children's Medical Service. It appears to have definite advantages over phenyl-ethylhydantoin.

LARYNGOLOGY IN RELATION TO DISEASE OF HEMATO-POIETIC SYSTEM: ESPECIALLY PURPURA AND AGRANULOCYTOSIS

According to Claude L. La Rue, Shreveport, La. (*Journal A. M. A.*, Sept. 26, 1931), purpura and granulopenia are serious diseases presenting difficult problems to the laryngologist. They are signs of imperfect balance between regenerative and degenerative activities of the myelogenous system. From present knowledge, sepsis, of varying type and degree, seems the most likely etiologic explanation. A condition of exhaustion, associated with pharyngitis and granulopenia, but with no other physical observations, seems fairly common. It is possible that certain unexplainable states of physical and mental depression, so-called nervous exhaustion, neurasthenia, and the like, are due to a lack of granulocytes, caused in turn by infection gaining entrance through insignificant pharyngeal lesions. Opportunity to determine more definitely the function of the granulocytes lies within the field of laryngology and is an added reason why examination should include as a routine, a study of the blood.

EPITHELIOMA OF FACE

Gordon B. New and Fred Z. Havens, Rochester, Minn. (*Journal A. M. A.*, Sept. 5, 1931), believe that primary complete removal of epitheliomas of the face by surgical measures, including surgical diathermy, is the treatment of choice. For the treatment of inactive lesions, the growth may be excised or removed by surgical diathermy; the tissue removed may be replaced by a full-thickness skin graft or a pedicled flap, at the time of the primary operation. Active lesions, frequently recurrent lesions, and regions which have been subjected to radiation with involvement of cartilage of bone are best destroyed with surgical diathermy, the deformity being disregarded. Reconstructive surgery should be delayed for at least nine months to a year. The gland-bearing fascia which drains the primary lesions should be removed in cases of carcinoma of the lower lip.

Original Articles

MENTAL HYGIENE IN THE FAMILY*

FRANK PARSONS NORBURY, A. M., M. D.,
F. A. C. P.

Medical Director, Norbury Sanatorium
Member National Committee for Mental Hygiene

JACKSONVILLE, ILLINOIS

THE FAMILY

The family is the social unit of human relations. It is the oldest historical institution in the world. According to Westermarck, it has proceeded, uniformly, with endless minor variations from the anthropoid ancestors of man, on to the present day civilization. Marriage and the family are most intimately connected with one another; it is originally for the benefit of the young that male and female continue to live together. From the family the State itself was derived, likewise the church, school, industry and other institutions recognized as parts of creative social evolution.

Its Biological Foundation. To understand the family as a social unit it is necessary to understand the biological foundations, upon which rests the evolutionary adaptations to family life. Popenoe says, family life is not often considered from the biological point of view because biology forms a small part of formal education, and also because the normal biological factors are particularly intimate and perhaps, some of the abnormal, unpleasant to contemplate. Biologically, the normal family may be defined as one in which two adults live together and give birth to an appropriate number of healthy and intelligent children, whom they bring up to lives of usefulness. The question of family implies, as Westermarck emphasizes, the question of marriage. Marriage according to the custom, traditions of Western Civilization, has meant a family and children. There was a time when, if no children were born, the marriage could be, and may have been, automatically dissolved. But, in this day and age of birth control, marriages at the outset may be, and many are, planned to avoid procreation permanently, or at least to limit the number of children born, to become members of the family. The control over the size of the family is a

distinguishing feature of modern Western Civilization. Havelock Ellis says, that is becoming a characteristic of our marriage system, and is of immense significance in relation to the family. Not that it can affect the existence of the family, as such, since that rests on a biological foundation that cannot be destroyed. But, it furnishes an altogether new control over the forms the family may assume and renders the family adjustable, in a way that has never before been possible to the developing directions of our general organization. The size of the family concerns the mental hygiene problems originating in it. The size of the family involves the eugenic problems of birth control as a factor in selection, both in its biological and social significance. Biologically the conservation of the family concerns us all. Popenoe emphasizes this paramount social issue as having its foundation in biology when he says, "the family is primarily, though by no means exclusively, a biological question and it has not usually been examined from the biological side. It is significant that there are few biologists among those who are crying out so loudly for the break-up of the old-fashioned home. As soon as the family is studied biologically, it is seen to represent an evolutionary adaptation for the benefit of mankind. The family, therefore, is no more out of date (except in the movies) than is man's habit of walking upright which is likewise an evolutionary adaptation." Popenoe expresses his belief, "that, to a large degree, the difficulties in which the family now finds itself are due precisely to the fact that isolated and individual cases have been multiplied and held up to astonish the public." (This may be attributed to the medium of the movies and, too, by the yellow journalism and trashy news stand current magazines literature.) Sight has been lost of the broad underlying facts and principles.

Its Social and Economic Factors. The existing social and economic organization of society is very much in the forefront of public discussion, as evidenced in dependable magazine literature and the proceedings of the recent White House Conference on Child Welfare and of the great number of societies and associations, engaged in search for solution of the very varied problems paramount as social issues of today. It is quite evident as we read these proceedings and the vast literature on child welfare, mental hy-

*Read before section on Public Health and Hygiene, Illinois State Medical Society, at East St. Louis, Illinois, May 6, 1931.

giene, birth control, eugenics and genetics, that as yet there are no final solutions to these important problems. Just recently there has been brought into public controversy from the socio-religious point of view, the question of birth control, in which Pope Pius XI issued his opposing historical encyclical letter. This was precipitated by a previous favorable report (a Protestant pronouncement) made by a House of Bishops. Such an important controversial question has its direct and indirect effects upon the family and racial future as viewed from the standpoint of biological foundations of society. We, as physicians, must appreciate the essential significance of the eugenical values of birth control. Due scientific consideration of the immutable human biological principles involved, is an imperative need on our part because these principles affect the life of man as an individual, his family and his institutions. Prof. Hankins of Smith College says, "Birth control is, without question, one of the most momentous movements now affecting the evolution of western people. It is vastly more significant from the long time view point, than such matters as the tariff, immigration, prohibition enforcement or the stock market crash, which ordinarily engages the thought and energy of the official guardians of the welfare and future strength of the nation. It is a reasonable opinion that social welfare could be enormously enhanced by a reduction of the rapidly growing burden of the thousands who ought never to have been born." Moreover, the future character of Western civilization depends largely on the outcome of the decisive battle now being waged between the advancement and popularization of scientific knowledge and view points concerning the family as an institution on the one hand, and the ancient enemies of the family, ignorance, superstition, unregulated control over motherhood, with its wasted and depleted physical resources incidental to excessive childbearing, deplorable abortions, birth of defective children and the devastating effects of fears, worries with associated neuroses and psychoses. We, as physicians, are confronted with these important problems most of which can be eliminated or at least attenuated, by a sound eugenic program for social welfare and race betterment, based on sound ethical effective measures for birth control and a defined

practical, workable, mental hygiene program that will concentrate on the emotional life of man.

Its Emotional Upheavals and Behavior Problems. Again, as physicians, we are well aware of the fact that the family and the individual as social aggregates are beset by infinite and varied emotional problems, causing grave and sudden upheavals, such as follows economic disaster, wars, floods, droughts, earthquakes, and other events which produce strokes of ill fortune and inhibit and perturb social evolution. As evidence, we have the experiences of the turbulent years of social upheaval incidental to the World War and now the present economic disaster, which on a large scale, affects thousands. In consequence of which the world is in a state of instability and stern realities are facing us on all sides. We are confronted by evidences of nervous breakdown of society itself, of its social units—the family—to say nothing of the psychiatric problems of the individual which are constantly intruding themselves into the family life, affecting its social integration. The position of the family at such times of stress and perturbations is fully expressed by Harriet Townsend who says: "The family in a changing world has come through the shocks and storms of social upheavals with its integrity impaired to be sure, but no satisfactory substitute has been found for its primary functions. The family continues to be the training center for little children and a physical and spiritual base from which youth goes forth, fortified in body and spirit to adventure into new and untried associations." Here is where mental hygiene, as a science, in its application to the problems of the family, the individual and, too, the community, has a strategic point of attack which aids in tracing effect to cause. Those of us who deal with, and have thrust upon us, the very varied problems in human behavior, are quite aware that their practical clinical interpretation necessarily involves the essential facts of home life, because the home as the base from which individuals go forth to establish their own independent social existence, is responsible for, and the creator of, the behavior patterns, which govern the individual in the complex conditions of his after life. If purposive activity follows wholesome culture of patterns which parental foresight developed and supervised, then these cultural heritages promote the unfolding of native personality traits in a

wholesome socially constructive manner. Mental hygiene, modern psychiatry and psychology, deal with the instinctive emotional life of man, in its social heredity, its cultural heritages, its native hereditary personality traits, and the behavior reactions related to environmental relations. Thus, we are made aware of the enormous influences of parental types of the family in its interrelations, its institutional potentials, embodied in the code of family life and with the conflicting patterns of neighborhood and community life. Doubtless many of you wonder where and how does the family physician fit in a program, that proposes to solve the problems of this individual which are largely representative of reactions, of heredity, environment and circumstance? My answer is that the philosophy and technique of mental hygiene, as applied to the family and the individual justly and rightly comes within the purview of medical service. And, for the reason, as stated by Appel and Smith: "Our point of view is well expressed when we say that a nervous breakdown is usually an emotional breakdown—a disorder, a disturbance of the emotions. If this is so, the breakdown has none of the finality and necessity that we are wont to associate with the word 'disease.' The reaction seems, to a great extent, to be psychologically determined, caused by the individual's emotional response to a given situation. This is the meaning of the term 'psychogenesis'." Therefore, it is possible to approach these conditions from the point of view of psychology (which all physicians unconsciously use). In the great majority of cases both in children and adults such an approach is not only necessary to ascertain the type of personality, the behavior patterns (the problems of personal organization), but it is superior to a straight organic, medical approach. "The physician of today who ignores the emotional aspects of the patient's personality may be ignoring the most important factors in the condition. Physical, organic, toxic, infectious and hereditary factors must, of course, be taken into account when important, but in nervous conditions especially or in cases of marked unhappiness and inefficiency, whether in vocations or at school, personality reactions are most important." If the psychological approach to personality difficulties or nervousness is important, there is little need to emphasize the value of mental hygiene in family life.

Its Educational Program for Mental Hygiene. Mental hygiene should permeate the whole educational program from infancy, through the period of adolescence and also into adult life. Child guidance has become the slogan of modern mental hygiene. Parental education, too, is one of the advanced ideals that has for its objective and stabilization of conventional family life and the interrelations of parents and children, considering the essentials of what may be regarded as norms of familial behavior patterns. Burgess "believes the conventional schematization of familial interrelationships is not to be dismissed as unimportant. To the contrary, it is our expression of our deepest sentiments and of our most profound convictions of what family life ought to be." True, family ties are shifting, and changing, and this changing world, due to the advent of various new ways of living, of which may be mentioned the apartment house with its restricted environment, the hotel life with its decadence of family traditions, the employment of married women outside of the home and other narrowing influences which reduce the points of contact of the family with wholesome environmental conditions, are having their effect in producing lopsided personality development in children, thus inhibiting their equipment to meet everyday life. We, as physicians, are made aware of these lopsided personalities with faulty mental attitudes and emotions, which are traceable to lack of child guidance. And whose early life twisted by environment and circumstance never reach the goal of stable, dependable personal development. Let us not forget "that as the twig is bent the tree is inclined." The bending of the twig of mental life and the moulding of personality are the logical sequences in the development of creative intelligence, the patterns of which are taken from the life world about the child. Education lays the foundation for the evolution of a personality; environment and circumstance join to build the superstructure. Education, according to Osborne, is such a vastly comprehensive term that it included every power and function of man as a whole and of every cell of which a man's body is composed. You cannot detach the education of the cells of the frontal lobes which distinguish the higher order of human brain from the education of the cells of the liver which supply the frontal lobes with chemical reactions necessary to pure thought."

Mental hygiene would have us always keep in mind the three fundamental factors in child development and character building, which concern us as clinicians, namely; heredity (including social heredity), environment and circumstance, the clinical values of which are in the order mentioned. The importance of heredity, as delineated in the science of genetics is coming to be recognized as a crying need in racial development. Genetics and eugenics, as mates in the purposive improvements of the human race in social specialization and cooperation, have made great progress in recent years. The same is true in the advance in intelligent control of the environment. Social organization includes environment which now with increasing illimitable forces made available by science, has become a very potent factor in shaping the social course of the family, the individual and not least, the community. There is evidence everywhere, that the environment in family conservation is now of paramount importance.

Its Social Course in Everyday Life. More and more thoughtful people are realizing that good family life, in spite of all of modern conflicting conditions, can be maintained here and now, if the self-evident truths of child guidance, parental education, and regulated school and community environment, be accepted as moulding agencies, that inspire in and create for the child, right attitudes toward life and give creative values to the motives which actuate their everyday living. Mental hygiene believes in philosophy of home life, which as an environmental and circumstantial factor, will contribute to the child a practical broad usage of the opportunities thus created, that it may respond to these opportunities quite normally in its own volitions. True, these volitions need training. Here is where child guidance, utilizing the cooperative organization of the family with its intelligent comprehension of the world of facts, physical and spiritual, calculated to create and sustain interest in realities. Mental hygiene would have the child guided in its normal life of activities and interest, that in the genetic development of its dynamic capabilities, there shall be an unbroken line of achievements. Growth from the plastic period of childhood, on to adolescence is following the behavior patterns which environment and circumstance have laid down. The parents, in safeguarding the welfare of their children dur-

ing these formative years, should have the benefit of modern specific knowledge of mental life of the child, as developed by research, discriminating observation and sane study of the genetic evolution of mind. In so doing, they will better understand child-life and the individual problems of their children. No two children are alike and no two respond to the same stimuli of family life. What will create a faulty mental attitude in one, is no criterion of what will be the result on the other children. Burnham's "Normal Mind" is today one of the most practical constructive contributions on mental hygiene, that has yet been published. It should be in the library of every physician who has thrust upon him, only too frequently, the problems of child life in the family. Burnham's dictum, "A normal integrated personality is developed for purposeful activity, in doing one's own tasks—individual and social, is worthy of the family physician's consideration. Mental hygiene, in its office, desires to contribute its accumulated knowledge to aid parents to have a sympathetic understanding of the development of the mental life and evolution of character of the child.

Its Problems in Child Guidance Including Adolescence. The development of the child is, really, one of the greatest scientific problems of mental hygiene and social psychology. The environment of family life, with its traditions good or bad; with parents displaying stability or instability, with emotions controlled or uncontrolled; with training good, bad or indifferent, these are the moulding factors which are to influence, for weal or woe, the social and mental life of the child. It is largely the traditions of the adult and the influence of environment and the ideals of environment and the ideals of society into which a child is born, which suppress, modify and obliterate his inheritance and make him what he is when he reaches adult life. Williams tells us "there are no adults, that we all are in our adolescence, insofar as our behavior reactions indicate. These behavior reactions are simply those of adolescence, not yet solved and the reason we get ourselves, our children and their children into such a lot of emotional hot water, is simply that we have not grown up. It is with emotional difficulties, which come from deeper than body or intellect, that we clinicians deal. The progressive failures of youth and maturity strew the way to the juvenile and criminal

courts due, to a great extent, to the fall from the higher estate of childhood and its potentialities for good, to that of maladjusted, anti-social, disrupted and misdirected endeavors of the individual to develop normally to maximal maturity; he fails to grow up." Williams reminds us that "it is not economic conditions alone that are changing the American home so rapidly. These forces are, at the moment, so strong that they would, undoubtedly, make for some reorganization, even under conditions more unfavorable to them; but these economic forces are aided and abetted by conditions within the home itself. Were the home not under the present economic pressure, the same result eventually would be brought about by the dynamic forces within the home itself." "The home does not offer a sufficient, suitable emotional outlet for the average person who enters upon homemaking." "A home is an adult institution. For two emotionally adult individuals it offers an outlet for the greater part—not all, of course—of their emotional needs." Williams further says, "when one considers the number of individuals whose domestic difficulties by their very nature are obviously due to lack of emotional development, and those ordinarily considered happy, well adjusted and successful, but whose very strivings and methods show an equal lack of development, one is prepared to find in examining an institution so dependent upon adult emotional development as the home, a complex situation full of difficulties when two individuals demanding of a situation more than it can give, with at least one limited almost entirely to this situation, life takes its course over the ups and downs of neurotic victories and compromises." "Home becomes a place of conflict, openly acknowledged or bravely denied. Into this children are born and the place becomes one of infection, an infection more pestilential, perhaps, than the bacterial diseases usually so classified. Its ramifications, its paralyzing effects are only beginning to be perceived." "Emotionally immature parents infect with their own infantile and childish reactions, their children who are, thereby, prevented from attaining a healthy emotional maturity themselves and another group of parents is produced as unhappy and inadequate as the first." I have purposely quoted this very pointed but true comment of Williams on the infected home, as it falls to the lot of the family physician to meet just such

problem cases. Not only sympathy for, but a study of, the family situation thus becomes a feature of the doctor's work. Here is where natural aptitude and a broad knowledge of human nature enables the physician to have understanding and comprehension of the problems in hand. However comprehending the good physician may be, it is a difficult job to quiet the endless diversity of fears, sorrows, suffering, sins of omission and commission, disappointed hopes that torment the body and soul, derange the body's repose growing out of these many troubles. Here is where skill, tact and applied wisdom penetrate beyond the bodily ills to the spirit of the individual. All of you have experienced such situation where "it is far less easy to dispel the spiritual upheaval reflected in disturbances of health, than the ravages of physical disease." "It demands more human insight, greater patience, more kindly consideration of traits, the result of family mental infections, than the more concrete problems of internal medicine." Here, something more than trained physical diagnostic skill and more subtle than simple reassurance, is required and demanded. From such experiences are born the realization that the family is one of the most vital social influences.

Its Problems of Education for Family Life. To make the family the responsible institution it should be in human welfare, requires education for family life. This education for family life not only begins with the infant in the home, but this is the beginning of parental responsibility where example and precept of the parents lay down the heavier patterns, which are to mould the character of the child. Let us not forget that the mould of personality is born with us, character we achieve. No real parent will sidestep responsibility. But the untrained parent, mother or father, does sidestep, through ignorance and perhaps purposely, when they fail to face all critical situations squarely; fail to meet the duties thrust upon them and thus losing the value of satisfaction of knowing that they are custodians of the family which is the central fact in human life. The ultimate goal of every individual is happiness. The vital influence of happiness is no more clearly defined than the contribution which parents can make in guiding the genetic evolution of the mind of a child. There is then inculcated a sense of responsibility, that goes back to the conception of the life of that

child. The meaning of that conception which largely determines the parent attitude toward that child after it is born and the development of the child into a responsible citizen. The emotional attitude toward sex life and parenthood enters here with marked potentials for weal or woe as to the happiness of married life and the altruistic endeavors which may eventuate from the family as a factor in human welfare. The trend of modern education for parenthood is to begin with the child, to create a favorable attitude toward sex and parenthood which the child adopts before he is five years old, because the attitude thus early adopted is the attitude toward family life which will prevail in later years. Many colleges for women have recognized the practical social need for training in parenthood, notably Vassar, where the human side of parenthood is taught in a truly practical and scientific manner. The psychology of sex is presented as would be the history of Rome and the scientific side of the physiology of the birth of a human being, as would be the laboratory study of other physiological functions of the human body. This is as it should be. The mental life of the child in its genetic evolution as well as the modern studies of the physical care of children become a part of parental education. Then, too, marriage as a human institution needs to be studied, and married life including sex life—leading to the “Ideal Marriage,” should be a part of everyone’s education, and especially those contemplating marriage. Mental hygiene in the family with its wholesome and lasting benefits in the progress of social evolution, is much more a part of the purview of medicine than it is of sociology or allied humanities. “After all it is human intelligence, intelligently directed by those who understand human beings, that must and will direct the tasks of social welfare, human welfare, in the problems of prevention, conservation and progress of mental health.”

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MULTIPLE MYELOMA*

CHAS D. CENTER, M. D.

THOS. J. MERAR, M. D.

QUINCY, ILL.

Multiple myeloma is a rare malignant disease¹ of the bone marrow; arising chiefly in the ribs, vertebrae and sternum—often exhibiting a widely diffuse osseous involvement. Cases have been reported with metastases to the spleen, kidneys, liver and lungs.

The condition is characterized by the growth of multiple tumors² derived from the hemopoietic cells of the bone marrow. The histopathological structure is more or less uniform, being composed of plasma cells or their derivatives.

Growths arise simultaneously in the bones involved; encroaching on the cortex which becomes thin and eroded, allowing for the invasion to surrounding soft tissues.

Bence-Jones¹ in 1847 reported the presence of a peculiar protein in the urine of a case of osteomalacia, which has since been found to be present in a large percentage of cases of myeloma. The first case of this disease reported was that of McIntire in 1850 under the term *mollities osseum*, another case was reported by Weber in 1867. It was not until 1873 when Rustizky first recognized the bone marrow involvement that it was termed multiple myeloma.

In 1889, Kähler² described a similar case and suggested that the protein might be diagnostic of multiple myeloma; as a result the condition has been referred to as “Kähler’s disease.” Wright reported a case in 1890, and Christian in 1907. By 1912, Wood had collected data on 50 cases which he increased to 100 cases in 1920.

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At present, Ewing has the recorded evidence of 140 cases. In 6,000 necropsies at Bellevue hospital of New York, Symmers⁶ found 3 cases of multiple myeloma.

Multiple myeloma is essentially a disease of later life; approximately 80% of all cases occurring between the ages of 40 and 70 with the peak incidence at 55.⁵ In this respect it closely follows the age incidence of metastatic carcinomatous skeletal tumors. Cases have been reported in children by Roman⁶ and by Elizaldi⁷ but they have been disputed by fellow investigators. As far as sex is concerned, the occurrence of myeloma in males, roughly estimated, is twice as frequent as in females. Anders and Boston, reporting 33 cases of myeloma, found 80% in males.

The disease has been reported in England, America, Germany and Italy. As a matter of fact, there is no locality to which the disease is limited, nor does it favor any climate or social strata.

As to the etiology of multiple myeloma there is little that can be definitely stated. Anemia, trauma and infection have been mentioned as causative agents.

In reviewing the clinical data of a number of cases previously reported, there appears to be several cardinal features which were found present singly or collectively in practically every case.

First, pain. This is the outstanding symptom and that which usually sends the patient to the physician. The patient describes what he believes to be a rheumatic or neuritic pain. It is wandering, intermittent, and transient: usually confined to the back; most often low lumbar or sacral. Many complain of pain over the ribs, sternum, legs, arms or shoulders, becoming aggravated by movement or pressure. There may be a period of intense pain, which lapses into a period of intermittency, an asymptomatic phase extending over a period of several months or a year. This phase in which the malady is apparently arrested is fairly characteristic of multiple myeloma, and was observed in the case I am about to report. During the final stages of the disease, the pain reaches a climax in which it is at a maximum severity with paresthesias and root pains, shooting, boring or stabbing in

character, radiating peripherally to the nerve filaments.

Second, tumor. Often tumor formation is the initial sign that calls attention to the disease.⁶ Multiplicity of the tumor is one of the outstanding features of this condition. Walgreen, Morax, Geschickter and Copeland have found only five cases with a single focus. These cases were admittedly not completely X-rayed. 85-95% of the cases show multiple involvement of the ribs, sternum, clavicle or spine. A lesser percentage in addition show invasion of the skull, pelvis and extremities. It is practically axiomatic to say that the disease is confined to the red bone marrow. As to size, the lesions vary in dimensions from that of a pin point to a walnut. It has been found that lesions near the surface are brought to the patient's attention by pulsation or tenderness. Pathological fracture may occur before its presence becomes apparent. As to the physical characteristics of the tumor itself, they have been described as elastic, yielding, pliable or malleable; red or gray in color according to their vascular growth. As the lesion encroaches on the cortex of the bone there may be produced a thinning and perforation, allowing the process to extend to surrounding tissues.

Third; fracture.³ The bone destroying process of this disease is exemplified by the frequency of pathological fractures. There is no neoplastic disease in which fracture takes places so often as in multiple myeloma, occurring most frequently in ribs or clavicles. Bloodgood states that in other tumors of the bones, pathological fracture takes place almost exclusively in the long bones of the extremities, while in this disease the principal sites of fracture are the ribs, sternum or clavicles. The occurrence of several fractures in different bones is not unusual.

Fourth, deformity. Deformity of the bones, as a result of tumor formation and bone necrosis, is often only met with in the far advanced cases. The gradual degeneration of the vertebral body with collapse of the spine, especially in the thoracic and lumbar areas, is seen fairly often, and was a feature of our case. Scoliosis, kyphosis and flattening of the lumbar curve with telescoping of the vertebral bodies is described in the literature. Recently in our case we have

been able to detect annular enlargements of the long bones.

Fifth, kidney involvement. The changes in the kidney are neither constant nor uniform. Chronic nephritis with non-protein nitrogen retention and a low blood pressure is the usual occurrence in cases reported, although the blood chemistry and pressure in our case were insignificant.

We encountered a chronic nephritis with albumen ranging from XX to XXX, at all times, and a fairly consistent showing of Bence-Jones bodies. Every case reviewed mentioned nephritis of one grade or another, and nearly all mention Bence-Jones bodies; in fact many cases have been brought to light on the basis of this test. The presence of Bence-Jones bodies in the urine, has been variously reported from 60 to 80% of the cases. It is true, as we found in our own case, that they will appear and disappear at irregular intervals. Bence-Jones bodies are not, however, a specific clue to multiple myeloma, they may appear in any disease process of the red bone marrow. The test is made by heating the urine to approximately 60° c. A cloudy white precipitate appears, which will disappear at 90° c.-100° c., and again forms on cooling.

Sixth, blood picture.⁵ Again we cannot make definite statements except to say that the majority of cases of multiple myeloma, will show a secondary anemia. Our case showed 50-65% hb., 2,680,000 to 3,340,000 r. b. c. and on one occasion for a short time, a leucopenia. The differential count was not significant, Geschickter found myelocytes and eosinophiles in abnormal numbers but ours were within normal limits.

Seventh, metastases. Pappenheim, Lubeck, H. Hirschfeld, V. Damarus, Eugene Fraenkel, quoted by Kaufman, are of the opinion that true metastases, per se, do not occur as in ordinary malignancies, but merely an expression of a systemic disease of the meopoietic system. On the other hand, Arnold, Hoffman, and Herxheimer have found what they believe to be spleen metastases.

Eighth, x-ray. The x-ray has done much in helping to clear up doubtful cases of this disease, and a complete study of the entire skeleton will often reveal lesions at wholly unsuspected sites. As said previously, the trunk, sternum, ribs and spine are the usual distribution.

The bone destroying lesions show up as irregularly rounded, punched out areas from 1/2 to 7/8 cm. in size, and when diffuse give a mottled appearance. In addition to the destructive process, it is quite common to see thickening and enlargements.

Metastatic carcinomatous bone lesions are not unlike the destructive process of multiple myeloma, and must be carefully ruled out.

Prognosis and Treatment: The outlook of this disease is, practically without exception, unfavorable, the course running from one to two years, occasionally three years. I have been unable to find a record of any treatment which has shortened the duration. Sulpharsphenamine has been recommended and was used in our case, without significant results. Several physicians reporting cases have mentioned the use of x-ray exposure and Coley's toxin without avail. The therapy is therefore mainly palliative and unsupportive.

Summary:

1. Multiple myeloma is a rare malignant disease of the bone marrow.
2. Sites of pathology are mainly in ribs, sternum and vertebrae.

Diagnosis based on:

Pain, tumor, fracture, x-ray, biopsy, kidney involvement and B. J. bodies.

REPORT OF CASE

O. M., white, intelligent active business man, aged 70 years, gives following history.

Three years ago he consulted one of us (C. D. C.) who made a diagnosis of pyelitis, which cleared up under the usual therapy. January, 1930, he was treated for a supposed pleurisy while in New York City, and left for home against his physician's advice. Twenty days later he appeared at the office seeking relief from pain in his chest, which was accomplished to a considerable extent by strapping with adhesive. The following March while attending to his business, he stubbed his toe on an inequality of the pavement and immediately felt a sharp sticking pain in his right chest. At the same time he complained of low lumbar pain which was so severe that on being moved the patient would cry out with pain.

The past history is negative except for hemorrhoidectomy and unilateral orchidectomy, in his youth. The systemic history is practically negative. Physical examination revealed a tall well developed anemic appearing white male, complaining of pain in right chest and over lumbar sacral spine. Beyond the usual arteriosclerotic changes evident in a man of 70 years, the

only positive findings were tenderness and diminution of motion over painful areas.

B.P. 120/80	No abnormal cells present.	
Blood Examination.		
R.B.C.	3,340,000	2,680,000
H.B.	65	52
C.I.	1	1
W.B.C.	7,650	4,750
Staph.	3	0
Segm.	62	41
Polys.	65	41
Lymphs	32	57
Myel.	0	0
Blood sugar—90 MG.		
Non-protein nitrogen—33 MG.		
Uric acid—2 MG.		
Blood cal.—7 MG.		

Urinalysis:

Acid—1008—Alb. xx Indican— x W.B.C. xxx B.J. —
 Acid—1004—Alb. xx Indican— — W.B.C. xxx B.J. x
 Acid—1010—Alb. x Indican— — W.B.C. xxx B.J. x
 Acid—1010—Alb. xxx Indican— — W.B.C. xxx B.J. —
 Acid—1012—Alb. xxx Indican— — W.B.C. xxx B.J. +

Diagnosis: Multiple myeloma, chronic nephritis, chronic myocarditis.

X-ray report: Partial collapse of the body of the 12th vertebra with a suggestion of a beginning similar process in 11th thoracic body. The intervertebral spaces in this situation appear normal. There is a slight scoliosis of lower thoracic spine with the convexity directed to the left. The entire vertebral column shows a rarefaction of the bones. (Minute small areas of rarefaction.) These small areas of rarefaction are also noted in the ribs and pelvis.

Long bones: In the medullary canal of the fibula and radius, there are a few small areas of rarefaction.

Conclusion: The impression one secures is, that this osseous change is due to multiple myeloma, or a metastatic carcinoma.

October 8, 1930. Examination was made of the skull, thoracic and lumbar spine, chest, pelvis, legs and forearms. The same condition previously described is seen, there being but little change. The condition in the spine appears somewhat more marked.

Therapy: Luminal; Calcium lactate; Viosterol; Liver-extract; Ultra-violet; Sulpharsphenamine; Distilled-water.

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DISCUSSION

Dr. J. P. Simonds, Chicago: The diagnostic value of the presence of Bence-Jones protein in the urine is well recognized, but not finding this substance in the urine does not exclude the diagnosis of multiple myeloma. On the other hand, its presence does not in

itself alone make the diagnosis because it is found occasionally in the urine in other diseases, such as widespread carcinomatosis with metastases in bone.

Dr. Wells has called particular attention to the fact that necrosis in these localized myelomatous areas in bone may be the source of origin of some of the bone cysts ordinarily shown on x-ray examination.

I would like also to call your attention to the fact that these cases not infrequently have a medico-legal significance. I noted in the history of this case reported by Dr. Merar that after stumbling the man suffered severe pain in the chest. Two of the cases of multiple myeloma which I have seen were made the subject of industrial claims. One was a porter on a Pullman car who claimed to have hurt himself as the car lurched, wrenching his back in the region of the sacrum. We found at postmortem examination a very extensive growth of myelomatous tumor which may, as a result of the accident, have broken through the bone and invaded the sacro-iliac synchondrosis. The other was the case of a woman who was on the street car; when it suddenly started or stopped her head was thrown back and she began to have severe pain in the region of the seventh cervical vertebra. The same sort of thing occurred in that case, the growth broke through the shell of bone into the spinal canal and produced a paralysis as a result of pressure on the spinal cord resulting in death. So sometimes the first symptom of this condition may be one that is due to an alleged accident and may have an industrial or medico-legal significance.

Dr. T. J. Merar (Closing): I would like to mention that this patient is bedridden, and every two or three weeks he suffers a pathologic fracture of a rib while lying quietly in bed. We frequently get a call informing us that the patient is suffering with severe pain. On examination we find crepitation and evidence of rib fracture. The urine clears up for a few days and then shows marked albuminuria. The patient is making a downward course and is becoming weaker all the time.

EARLY RECOGNITION OF GAS BACILLUS INFECTION BY X-RAY*

HARRY OLIN, M. D.

Director of X-Ray Department, Woodlawn Hospital

CHICAGO

It is well recognized that crushing wounds such as occur in trolley car, street railroad, automobile and industrial accidents are sometimes complicated by gas bacillus infection. The late World War, fought under conditions wherein large masses of troops were exposed to constant shell and machine gun fire in a soil rich with gas bacillus, tetanus and other allied organisms,

*Read before the Section on Radiology of the Illinois State Medical Society, May 6, 1931, at East St. Louis.

caused in soldiers many wounds complicated by gas bacillus infection. These two sources of infection are so well known as to merit little comment. But the exceptional case at times requires constant alertness on the part of the physician treating a supposedly common injury—in the instance of the first case, a fall from a wooden bench causing a compound fracture and complicated by gas bacillus infection. In civilian life such injuries from falls are common but a complication as gas gangrene developing in the wound is comparatively an infrequent and unusual sequence. Because of the rarity of this complication under these conditions and the grave danger to loss of limb or even life, these cases are reported with the hope that it will stimulate sufficient interest to recognize the complication early. A correct diagnosis in the first twenty-four hours may save a limb—if made later, loss of the limb inevitably occurs, through gas gangrene, or death may follow from septicemia or gas embolism.

The offending organism usually present in most cases is the bacillus aerogenes capsulatus although other bacteria have been found accompanying the process. The consensus of opinion seems, however, to indicate that the Bacillus aerogenes capsulatus occupies the leading role and the other bacteria may or may not play a part in the process. The infection is apparently more virulent and rapid when associated with active streptococci or other pus producing organisms. Many writers contend that the infection is a mixed one as demonstrated clinically, anatomically and pathologically with the Bacillus aerogenes capsulatus occupying the leading role; various other bacteria have been described as able to produce gas as the Bacillus proteus vulgaris, the Bacterium pseudo-oedematis maligni and the Colon bacillus, the latter becoming most potent in the presence of diabetes.

Definition. Because many terms and names have been applied to this infection, it seems advisable to enumerate all the more common ones and to define the condition. The nomenclature, according to Freeman¹ in Keen's Surgery is confusing and includes a variety of names, some of which are gaseous gangrene, molecular gangrene, traumatic emphysema, acute putrid infection, acute gangrenous septicemia, spreading traumatic gangrene, emphysematous gangrene, acute

gangrenous edema, serous gangrenous infiltration, primary mephitic gangrene, progressive gangrenous emphysema, gas plegmon, acute microbial gangrene, fulminating gangrene, gangrenous cellulitis, malignant edema, anaerobic gangrene, gangrene foudroyante and gas bacillus infection.

It may be defined as a serious infectious disease characterized by a local, widespread, serous and emphysematous inflammation, frequently associated with gangrene and general symptoms of a profound toxemia.⁸

Mechanism of Infection. Infection may occur through wounds in any part of the body or gain access through any body cavity. Hematogenous infection sometimes does occur and may be carried to distant parts of the body as a case of gangrene of the vulva wherein extensive secondary involvement of the subcutaneous tissues of the left shoulder occurred without any lesion of the skin.¹ Gas gangrene of the abdominal wall following gangrenous appendicitis has been reported² and H. Von Seemen has reported infection of the thorax following a stab wound of the heart.³ It is well to bear in mind, however, that occasionally the infection may become latent and, if unrecognized, give rise to serious complications or even death. It not infrequently follows gangrene of the lower extremity resulting from impaired circulation whether the gangrene is dry or moist or the skin intact or broken. In the summary of six reported cases by Linton, of latent gas bacillus infection complicating gangrene of the lower extremity, three were diagnosed as arteriosclerotic, two as diabetic and one following thrombo-angitis obliterans. All six cases had amputations of which three died, one death due to gas bacillus septicemia in twenty hours.⁴ Linton makes the following statement, "The duration of the gangrene varied in these cases from ten days to three months prior to admission to the hospital. Thus the duration of the process does not aid a great deal in the detection of the gas bacillus infection, except that in cases of several weeks' duration, it should certainly be strongly suspected."⁴

Crushing wounds of the extremities are often followed by gas gangrene, the bacteria growing rapidly in the necrotic tissues and spreading along the muscle bundles. The gas formed in

the dead tissues causes further destruction by complete stoppage of the capillary circulation or by gas emboli and is retained by the fascial planes of the muscles.⁸ If death ensues, a liver riddled with small holes containing gas bubbles is found—the characteristic appearance of “foamy liver.”

History. Gas gangrene was not unknown in the early medical history. In the sixteenth century Ambrosé recognized it. The Spanish-American and Civil Wars had a considerable number of cases complicated by gas bacillus infection, the bacteriology of which was either unknown or little understood. In the Spanish-American War no mention is made of detection of gas bacillus infection by use of the Roentgen ray. A perusal of one of the first medical books of the Spanish-American War, published under the direction of Surgeon General Geo. M. Sternberg by the Medical Department of the Army, fails to reveal any mention of the use of the Roentgen ray in this condition.

Bacteriology. Welch and Nuttall, in 1891-2, first described the *Bacillus aerogenes capsulatus*. Frankel gave it the name of *Bacillus phlegmonis*. The term *Bacillus perfringens* was used by the French. During the World War it was the most common cause of gas gangrene (75%) although nearly always associated with other organisms, especially the *Bacillus sporogenes* and certain aerobes. Apparently only certain very virulent strains can produce gas gangrene and only in the presence of necrotized tissue in the wound. It is because of the latter factor that thorough excision of injured and crushed tissues was advocated and made an universal policy in the treatment of these wounds—the so-called “débridement” of the French.⁷

A noted French worker regards the *Vibrio* septique and the *Bacillus perfringens* as the causative factors in gas bacillus infection,⁵ although other organisms play a secondary part. The symptoms and appearance of gas gangrene varies according to the virulence and predominance of the organisms present at the time of injury. Some cases show gas without gangrene and some gangrene without gas. When emphysema develops in the tissues it usually spreads with alarming rapidity although the process of gas formation may be held in check due to the latency or temporary inactivity of the bacteria.

The period of incubation varies; in the graver forms infection begins twenty-four to twenty-eight hours after the wound, while the slow form usually begins on the fourth day. The latency of infections occurring in gangrene of the lower extremities has been already stated.

In truth many organisms have been described as able to produce gas gangrene. In order of their importance can be cited the following: 1. *Bacillus aerogenes capsulatus* (*Bacillus Welchii*) called *perfringens* by the French; 2. *Vibrio septique*, thought to be identical with the *Bacillus* of malignant oedema; 3. *Bacillus* of malignant edema; 4. *Bacillus sporogenes*; 5. *Bacillus fallax*; 6. *Bacillus histolyticus*; other organisms have been mentioned as the *Bacillus pyocyaneus*, the *Bacillus proteus vulgaris* and the colon bacillus, the latter being the most formidable in the presence of diabetes. The combination of the *Bacillus Welchii* with one or more of these bacteria, working by symbiosis in conjunction with the aerobic germs such as the streptococcus, furnish the most virulent types of gangrene. Dust, soil and feces are the media which form the habitat of the *Bacillus aerogenes capsulatus* and its group of allied bacteria. Gage has even found gas bacillus not only in the wool pads of bullets, but was able to grow them in cultures taken from woolen clothes after having been pressed and in samples of unused cloth taken from a neighboring tailoring establishment.⁹ It is believed that two distinct toxins are produced—one hemolytic, causing diffuse staining of tissues and the other toxic.

The *Bacillus Welchii* is a large rod, often encapsulated, and on certain media is spore bearing. It is anaerobic in character, grows readily in a variety of cultures, thriving best in litmus milk under aerobic conditions; coagulation soon follows and the coagulum is thrown into shreds, colored pink by acid formation, plastered against the sides of the tube. In clear whey are found masses of gas riddled coagulum floating on the surface, emitting an odor of butyric acid. Cultures should be examined at intervals of six, twelve, eighteen and twenty-four hours to detect at the earliest period the formation of gas as noted by bubbles in the media.

The Relation of the Welch Bacillus to Appendicitis and Its Complications. Jennings, with an experience of ten years with appendicitis and

its complications in relation to the Welch bacillus, regards the clinical picture as sufficiently diagnostic or suspicious when present to administer the gas serum in large doses. His routine consists of 100 cc. of the gas serum in 1,000 cc. of normal saline, given subcutaneously to avoid the usually severe reaction from the intravenous route; followed by 200 cc. daily for two or three days if the patient still has evidence of gas infection—rapid pulse with cyanosis, and if the organism is present in the peritoneal fluid.

He believes that with gangrenous changes in the appendix, appendiceal abscess, localized peritonitis or free peritoneal exudate or changes in the neighboring gut—usually terminal ileum—that the activity of the *Bacillus Welchii* is cut short by removal of the appendix. However, this is not always the case and he believes it to be a most active factor in the production of fatality. His dose in some cases has been as high as 1,000 cc. of gas serum.¹⁹

War and Civilian Infection. Among the wounded evacuated to the hospitals of the interior of France from March 21, 1916, to the end of the war, 1,851 cases of gas gangrene were recorded of which number 615 were fatal, a mortality of 33%. The number of fatal cases observed in the hospitals of the rear, reported according to the anatomical regions wounded were as follows:¹⁰

Regions	Cases	Deaths	Proportion of Deaths per 100 cases
(1) Head, neck, chest, thorax, abdomen, genital organs....	67	36	53.73
(2) Upper limbs including soft parts and skeleton.....	415	123	29.63
(3) Lower limbs including soft parts and skeleton.....	1267	455	35.91

On the other hand, in civilian life it is interesting to note the experience of several who have treated this infection. Tenophyr had a mortality of 29% in twenty-four cases; seven of the surviving had amputations and 42% recovered without amputation.¹¹ From 1922 to 1929 at the Grady Municipal Hospital at Atlanta, in a series of eighty compound fractures occurring in negroes, fifteen developed gas gangrene, a percentage of nineteen. Five other cases were recorded which were not compound fractures, one a diabetic gangrene. During the same period of ninety-seven cases of compound fractures in whites, seven developed gas gangrene, a percent-

age of about seven. In both classes the nature of the compound fracture was equally severe and Boland is of the opinion that the uncleanness of the negro undoubtedly increases his susceptibility to the infection.¹²

Clinical Course. To begin with, any type of wound may harbor a gas bacillus infection, whether superficial or deep, although sealed, deep wounds offer the most virulent type. Since the organism is anaerobic, wounds of any depth sealed against the air wherein interference with oxidation and blood supply occur, offer the ideal media for certain infection. Impairment of blood supply usually follows destruction of tissue, accompanied by edema or by tight splinting or packing of wounds, prolonged application of a tourniquet, excessive hemorrhage, shock and cold. Virulent infections are characterized by a rapid course, death often ensuing in a few hours after onset of definite symptoms. Symptoms in the average case, however, appear on the second or third day following the injury. Severe pain in the wound, rapid pulse all out of proportion to the temperature, fever, restlessness and an acute intelligence maintained to the end form a symptomatology which should make one suspicious of this infection.¹³

It is imperative to recognize this deadly infection early if loss of limb and life are to be avoided. Three very suggestive symptoms appear early, first pain which is all out of proportion to the amount of injury; secondly the obnoxious, foul, penetrating, fecal odor which is characteristic of the infection and thirdly, a greatly increased pulse which is disproportionate to the temperature curve; acuteness of intellect may be added to this syndrome to complete the picture; at the end of twenty-four hours there is usually a dirty greenish gray membrane over the wound. If the wound has been sewed, the edges will be red and bronzing of the skin in the affected area is seen if examined in good light. The dressing will be stained with a reddish brown serum of a foul odor likened to the smell of a mouse and *Bacillus Welchii* are found in the discharge but no pus is evident; bronzing of the skin usually precedes the crepitation which occurs when the tissues are infiltrated with gas and gangrene supervenes. Preferably before this stage has developed, a roentgenogram should be made; black areas or spots on the plate at the

site of fracture or in the neighboring soft tissues reveal the presence of gas long before there is crepitation felt in the tissues and when there is only beginning invasion of the muscle. Since gas is formed in six hours, as shown by stab cultures in anaerobic media, it is strongly recommended that roentgenograms be made every six hours to detect the first appearance of gas in the tissues.⁴ Later the limb becomes swollen and edematous and the skin covered with irregular patches of copper colored areas, some containing blebs, crepitation of the tissues is readily elicited, constitutional disturbances, fever, greatly accelerated pulse, perhaps beginning delirium, all may accompany the local manifestations of beginning gangrene and death may follow through septicemia or gas embolism. Great variations in the clinical picture may occur and doubtful cases must be carefully watched until the diagnosis is confirmed or excluded; relatively benign cases may assume a very virulent course.¹⁵ As in any infection, leukocytosis is present but may be absent in the early stages or later in the disease. The white count in one of the cases reported never exceeded 15,700.

Roentgen Ray Findings. In the first twenty four hours the roentgenogram will detect the presence of free gas in the tissues. A small, black spot, blotchy in outline, is the first evidence and if carefully visualized can be followed along the course of a muscle. Longitudinal shadows are the rule, since the infection travels along the muscle fibre and rarely transversely. The limb should be bare and dry, all splints and dressings removed to insure no confusion of shadows contaminating the film. Loss of tissue and injections with antiseptics should be considered as these two factors may simulate gas in the tissues. The shadows of the soft parts present round or oval spots, some isolated and some confluent, forming hollow spaces which appear dark on negatives and light on positives. The gas spots can be compared to holes in certain cheeses which, indeed, are due to an analogous cause.¹⁶ With the process advancing the soft tissues are invaded with irregular, blotchy areas of gas infiltrating the muscles and fascia and even obscuring the bone structure. The normal detail of the part is lost and the infection has now become widely disseminated and gangrene is certain to follow.

TREATMENT

When the infection is seen late with gangrene developing, amputation is not advised. The consensus of surgical opinion of those experienced in its treatment is that the mixed gas bacillus serum is to be given in heroic doses, preferably by the intravenous route, in amounts of 100 cc. and repeated. If 200 cc. do not control the infection it seems a better policy to continue treatment by intramuscular injections and to use from 300 to 400 cc. additionally. Some recommend a total of 500 cc. In one of the cases reported 580 cc. of gas bacillus serum was given intramuscularly with 1500 units of anti-tetanic serum. Sero-therapy is the most practical mode and the most efficacious for the protection against and treatment of gaseous gangrene. For the preparation of a polyvalent serum, one worker has used twenty strains of species of microbes including the *Bacillus perfringens*, *Vibrio septique*, *Bacillus edematiens*, etc.¹⁰

The consensus of surgical opinion favors early and frequent inspection of crushing wounds with thorough excision of crushed, mutilated and necrotic tissues. All foreign bodies should be removed in so far as is possible. As a rule the treatment is nothing more than a repetition of the French measure of "debridement" carried out during the war.

Because infection spreads along the muscle sheaths, removal of a muscle group, as advocated by Kellogg Speed, saves amputation. He excises the entire muscle including its origin and insertion and leaves the wound wide open. Many surgeons believe this type of surgery, combined with vigorous antigangrenous serum administered intravenously and early in the disease, would obviate amputation and reamputation, the course of which is common in many cases.

In the proceedings of the New York Surgical Society, Dr. Robert H. Kennedy presented a case of a man 24 years of age, who on December 17, 1924, when 19 years old, was struck on the right leg by cardboard weighing 100 pounds. Admitted to hospital with the compound fracture of tibia and fibula with another closed fracture of fibula. Under general anesthesia debridement was done thoroughly, fracture reduced manually, wound closed, plaster splint applied. Gas bacillus infection developed in 24 hours. Confirmed bacteriologically. Wound immediately opened and Carrel-Dakin treatment carried out. Four hundred c.c. of tetanus perfringens was given intravenously. At the fifth day there was no evidence of gas bacillus infection. No amputation. Dis-

charged on 132nd day with wound healed, solid union, complete motion in knee joint, no active motion in ankle joint. Patient made uneventful recovery except for abscess of os calcis due to Steinman pin. Abscess opened, treated, made uneventful recovery.

Another case reported, man aged 37, porter, admitted to hospital February 20, 1924, crushed injury of right leg, sustaining compound fracture of both bones, wound debrided. Fragment of tibia, 2 inches long, removed, wound left open, Carrel-Dakin treatment instituted, and plaster splints applied. Three days later gas bacillus infection occurred, leg reopened from 2 inches below malleolus. Four hundred c.c. of tetanus perfringens intravenously in 24 hours. Infection promptly controlled and by 18th day wound was fairly clean and commenced to be covered with epithelium. Discharged 107th day with union, no shortening, no deformity, and complete function of knee and ankle, although leg is smaller than that of the opposite side.

In discussion Dr. Kennedy mentioned that tetanus perfringens serum had been used in at least 25 gas bacillus cases, always accompanied by thorough surgical procedure; gives no ill effects from serum. Sometimes used as a prophylactic in cases in which there was possibility of gas development. Actually scrubbed wounds in debridement and saw no ill effects. In wounds which were dirty from being dragged in streets or ground around in bottom of an elevator shaft and where there was no muscle injury, effort was made to get out dirt, clean out muscle. If muscle actually was dead, it was excised; greatest dependence was placed on thorough washing, irrigating with up to 3 to 5 gallons of fluid.¹⁸

As a prophylactic 30 to 60 cc. of polyvalent anti-gangrenous serum (Lederle) is recommended combined with 1,500 units of anti-tetanic serum injected intramuscularly.* Most workers favor continuous irrigation with Carrel-Dakin's solution if it can be carried out religiously, otherwise daily potassium permanganate irrigations are in order. All wounds should be packed lightly with wet gauze. Of course it is needless to remark that supportive measures should be instituted to aid in combatting the infection.

SUMMARY

I can do no better than to repeat a list of conclusions which I summarized in a previous communication.¹⁷

*Since this is written a new combined serum has appeared in the market containing anti-gangrenous and anti-tetanic serum. Those whose experience is rich in this condition recommend and advocate this combined serum in all crushing wounds and compound fractures as well as a prophylactic measure. Certainly the serum treatment has been used, either not at all or in very small, insignificant doses. Any therapeutic measure to be effective, especially where a life is at stake, demands vigorous measures and adequate dosage pushed to the fullest possible physiological and clinical limits, to insure effective results.

1. Gas bacillus infection is a serious menace to life and limb.

2. All crushing injuries, gunshot wounds and compound fractures should have considered the possibility of this complication.

3. Early diagnosis is imperative, therefore early x-ray examination without dressing and splints with a repetition, if necessary, every six hours.

4. Inspection of all infected wounds twice daily; make smears and cultures for gas bacillus.

5. Early surgical attention—debridement and all it implies.

6. Intensive polyvalent anti-gangrenous serum treatment intravenously with supportive measures.

7. Continuous irrigation, preferably Carrel-Dakin's method, or, if that is impossible, potassium permanganate.

I might add, if I may, another suggestion to which reference is made in my paper, that is combined antitetanic and antigangrenous serum of 30 to 60 cc. as a prophylactic measure. I am greatly indebted to Drs. Mathew Everetz, Chas. H. Miller and Fred W. Moeller for their kind suggestions and the privilege of reporting these cases.

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Case 1. Attending physicians and surgeons—Mathew Evertz, Charles H. Miller, Fred W. Moeller.

Barbara A. (Case No. 9274), 4½ years old, admitted to the hospital August 7, 1930, 1:30 p. m. August 6, 1930, 4:30 p. m., fell from bench in garden recently sodded with rich black dirt, sustaining a compound fracture of the ulna. Mother applied cold bandages to check hemorrhages and drove five miles to city to physician; the patient was later taken fifty miles to Chicago and consulted own physician at 9:00 a. m. August 7. Temp. 100.3, pulse 110. Splint on left forearm was removed and punctured wound found which was painted with mercurochrome; wound at this time appeared clean. A splint was reapplied and child put to bed. At 1:00 p. m. the same day the doctor was called and found child in convulsions; admitted to hospital immediately. Temp. 103.2, pulse 145. After enema and warm bath temperature fell to 100.3; child had received narcotic before admission.

Physical examination. Well nourished, healthy-looking child. Examination essentially negative save for left forearm—punctured wound junction of upper and middle thirds left forearm covered with sterile dressing; bone crepitus readily made out. Diagnosis of compound fracture ulna junction of upper and middle thirds left forearm. Warm bath and enema had no effect on convulsions so child received 1/15 of combination tablet of hyocine, morphine and cactein; then was taken to x-ray at 2:30 p. m., August 7.

Following morning left forearm was again x-rayed with all splints and dressings removed. The fracture was then reduced under fluoroscopic guidance; while child was on fluoroscopic table fecal odor was observed and it was thought that child had a bowel movement. Reports of x-ray will be given under separate heading. With forearm in splint and limb bandaged, child was returned to room. At 1:15 p. m., hand and fingers appeared cyanotic so splint was again opened and cyanosis disappeared. At 6:00 p. m. cyanosis of fingers was again observed and all splints and dressings removed. At this time hand and forearm were swollen and edematous; skin showed irregular patches of a dusky reddish-blue color and was insensitive to pin-pricks; a thin watery brown color discharge, very foul in odor, exuded from the wound. A diagnosis of gas bacillus infection was made and mixed gas bacillus serum administered.

Laboratory Findings: 1. Blood at time of entrance

—White blood count 7250; Differential; polymorphonuclears 70%, lymphocytes 30%. Urine negative.

Bacteriology: Exudate from wound, smear Gram stain—Gram positive encapsulated bacilli, some showing spore formation, bacilli very large, very few other organisms, no pus cells seen. Conclusion—*B. aerogenes capsulatus*.

X-Ray Findings: 1. Roentgenogram, 8/7/30 2:30 p. m. Radiographs, taken through a perforated metal splint, reveal a comminuted fracture of the ulna at the



Fig. 1. Gas Bacillus infection 22 hours after injury; arrow points to beginning invasion of tissues with gas at site of fracture of ulna. No crepitus of soft tissues present at this time.

junction of the upper and middle third with internolateral and posterior displacement of the proximal fragment. In the soft tissues at the proximal end of



Fig. 2. Gas Bacillus infection 42 hours after injury. Note widespread dissemination of gas in muscles and fascia, extending into palm and to elbow. Extensive crepitus of soft tissues, forearm swollen and edematous.

the distal fragment of the ulna is seen a small area of decreased density (a black spot) which follows along the shaft for a distance of one-half inch. (Fig. 1).

2. Roentgenogram, 8/8/30, a. m. Re-examination the following day with the splint and dressing removed

shows, throughout the entire forearm and extending into the palm, irregular blotchy areas of decreased density (irregular black spots) which follow along the course of the fascia and muscles. The tissues of the forearm and hand are markedly thickened throughout. A fluoroscopic examination was made for reduction of the fracture.

Summary: Compound fracture of ulna associated with gas bacillus infection. (Fig. 2).

3. Roentgenogram, 8/26/30. Clinical diagnosis: Post pathological amputation of lower two-thirds of forearm following gas bacillus gangrene.

Left shoulder: Radiographs of the left shoulder and entire humerus reveal no evidence of any gas present in the soft tissues or changes in the bone; neither is there any evidence of pathology in the shoulder joint proper.

Left elbow: There is definite destruction of the upper ends of the radius and ulna, the periosteum of which is proliferated. The cortex at both ends of the bones appears moth eaten in character and probably involves the articular surface of both stumps. No changes are visible, however, in the lower end of the humerus.

Summary: Infectious arthritis elbow joint; osteomyelitis of stumps of radius and ulna following gas bacillus gangrene. (Fig. 3).

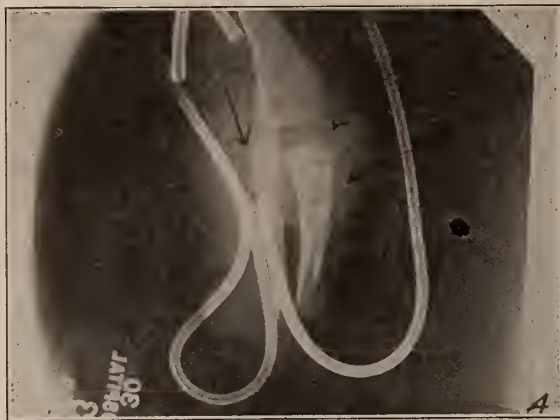


Fig. 3. Gas Bacillus infection 19 days after injury, forearm separated by sloughing due to gas gangrene. Stumps of radius and ulna remaining show bone destruction, necessitating removal. Catheters in place for daily potassium permanganate irrigations.

Treatment: 1. Anerobic antitoxin for gas gangrene (Lederle), serum containing antitoxin of tetanus, perfringens, vibron septique and B. histolyticus.

Aug. 7, 1500 units antitetanic serum.

Aug. 8, 100 cc. anerobic antitoxin.

Aug. 9, 100 cc. anerobic antitoxin.

Aug. 10, 130 cc. anerobic antitoxin.

Aug. 11, 50 cc. anerobic antitoxin.

Aug. 12, 50 cc. anerobic antitoxin.

Aug. 13, 50 cc. anerobic antitoxin.

Aug. 14, 25 cc. anerobic antitoxin.

Aug. 15, 50 cc. anerobic antitoxin.

Aug. 16, 25 cc. anerobic antitoxin.

Total—580 cc.

Progress: The child still continued to run a temperature, forearm became black and finally gangrenous, characteristic foul, fecal stench from arm and wound. August 17, rectal anesthesia (avertin) narcotic and dead tissue separated at line of demarcation, bone cut one inch above line and two rubber catheters inserted. Irrigation with potassium permanganate solution was done every three hours; irrigation carried out daily.

August 26 roentgenogram of stump of forearm (see report).

August 27, under rectal anesthesia (avertin) disarticulation of elbow joint; one cigarette drain and two gauze drains inserted in stump. Smear from discharge still showed presence of gas bacilli (B. aerogenes capsulatus).

Child sustained a serum reaction which lasted several days. On September 1, temperature fell to normal and granulations looked clean and healthy. On September 7, wound practically healed, slight serous discharge, temperature normal since September 1. Discharged from hospital.

Pathological report of bones removed: Fragments of radius and ulna. Mx: The periosteum is markedly edematous and vacuolated in places; the blood vessels are surrounded by collections of round cells; the collagenous fibres are somewhat hyalinised; a few cellular collections are seen at the edges of the periosteum; a club-shaped swelling of the periosteum was seen, containing a central necrosis and large amounts of polymorphs and cytoplasmic cells; the bone structures are partially destroyed by invading polymorphs and round cells; the bone marrow shows typical inflammatory changes.

Diagnosis: Chronic, purulent periostitis; subsequent osteomyelitis.

Case 2. No. 10531—P. McM. Admission Woodlawn Hospital December 16, 1930.

Occupation—Secretary.

History obtained from nurse and sister.

On November 16, 1930:

1. Crushed between two street cars—both legs and knees.

2. Gas Bacillus infection and amputation of right leg at knee.

3. Foci infection both shoulders—secondary.

Conscious when help arrived but later recalled nothing about accident. Both legs crushed at knees. Taken directly to another Hospital—legs set and bandaged. Dr. Moeller called on case four days later at patient's request.

Right leg was infected and gas bacillus and turned black two days after accident. Total of 400 c. c. of serum (anerobic) at intervals of 8 hours. On admission, 100 c. c. serum (gas bacillus—Lederle) intravenously; 50 c. c. subcutaneously. Every 8 hours, 50 c. c. given until total dosage reached 400 c. c. Following each injection a slight serum reaction occurred, with nausea, anorexia and slight mental disturbance. No chills or urticaria. Due to lack of nourishment and toxemia, grew steadily weaker and pulse reached 160.

Serum treatments stopped and 3 blood transfusions were given at intervals with good results. Appetite returned and patient gained strength rapidly. About November 30 right leg was amputated just above knee, under ethylene anesthesia. Condition of patient was poor during operation, but rallied with a blood transfusion. Later a fifth transfusion was given. Developed secondary involvement of both shoulders; left was aspirated and 10 c. c. of yellow pus was obtained (thought to be staphylococcus aureus). Red blood count varied from two to three million. Each transfusion caused a marked increase in red count. White blood count varied from fifteen to twenty thousand during illness.

Beginning Thanksgiving day the patient became very irrational and at times delirious and was kept in bed with difficulty. Past two weeks (Dec. 16, 1930) had lapses of memory with brief periods of irrationality, but mind clear greater part of time.

December 16, 1930—Physical examination.

Entrance: T. 99.4; P. 128; R. 22.

Poorly nourished male.

Head—Pupils equal and regular, react to light and distance. *Mouth*—Tongue coated, teeth fair, post pharynx injected. *Nose* and *ears* negative.

Neck—Thyroid negative.

Chest—Lungs, expansion limited on both sides. Many scattered rales over both lungs. Breath sounds rough. Resonance O. K.

Heart—Slight enlargement to left, first tone at apex is rough. Tones are all distant. Rate 128.

Abdomen—Negative.

Extremities—Recent amputation of right leg above knee. Wound is draining and skin flap does not cover surface of wounds. There is a denuded area over left leg below popliteal space draining pus. Left leg much lateral motion.

Impression—1. Recent gas bacillus infection. 2. Injury to lateral ligament of left knee. 3. Myocarditis.

Blood—December 16, 1930. W. B. C., 11,200; R. B. C., 4,170,000; Hb., 70.

Differential: Polys. 86, Eosin. 1, Small Lymphs. 12; Large Mono. 1, count 200 cells.

Date	R. B. C.	W. B. C.	Hb.	Polys.	: Poly. Baso.	: Eosin.	Small Lymph.	Large Mono.
12/20/30	3,580,000	12,800	65	78	..	..	19	3
12/22/30	4,190,000	11,200	50-60	83	..	..	14	3
12/27/30	3,680,000	13,200	60-70	67	1	..	28	4
12/29/30	3,675,000	13,700	65	72	..	..	20	2
1/ 8/31	3,630,000	11,650	60	82	..	1	14	3
1/15/31	3,740,000	10,800	60	77	..	..	19	4
Transfusion 1/17/31—500 c.c.								
1/21/31	4,500,000	15,050	70-80	79	1	1	16	3

This patient gradually became weaker due to failing strength of his cardiac muscle and expired January 23, 1931. It is of interest to note that all of surgery was very extensive with no delay after the accident and particularly the energetic serum treatment given. This

case succumbed due to shock of the accident activated by failing myocardial heart.

Case 3. R. W. Police officer.

Admission 3/1/31.

Service of Dr. F. W. Moeller.

While working under automobile, jack slipped, body of car falling on right leg just above ankle causing crushing wound with compound fracture tibia and fibula two and one-half inches above ankle joint. Accident occurred 5:30 p. m. Large lacerated wound inner side of right ankle with end of tibia protruding.

Operation 3/1/31, 8:30 p. m. Removal of all debris and dirt cleansed with iodine. Bones replaced in approximation and ends sutured loosely. A plaster cast applied as high as upper third of thigh. Cast split entire length except on foot.

Bacteriology: Culture made six hours after admission showed gas bacillus infection. Profuse sero-sanguineous discharge on dressing.

3/11/31. Steinman pin put through os calcis and cast applied encasing Thomas splint. Traction applied on Steinman pin through Thomas splint.

3/10/31. Roentgenogram: Through cast comminuted fracture lower end of tibia and fibula with displacement—external lateral and anterior bowing of tibial fragments which overlap.

3/19/31. Operation: Removal of dead bone. Ends of fragments sutured with silver wire.

3/5/31. Blood picture:

White count, 7,800; hemoglobin, 60; red count, 3,640,000. Differential: Polys, 84; Eosin, 2; Small Lympho, 11.

Serum:

3/1/31. In operating room 3,000 units mixed gas serum antitetanic serum.

All subsequent serum given was gas serum.

3/2/31. 20 cc. intravenously.

3/3/31. 30 cc. intravenously.

3/3/31. 50 cc. subcutaneously.

3/4/31. 28 cc. subcutaneously.

3/4/31. 30 cc.

Remarks: 3/2/31. Wound looks suspicious of gas bacillus infection; suspicious odor; few gas bubbles escape from wound; culture showed many large bacilli some showing spore formation.

Diagnosis: B. Aerogenes Capsulatus.

3/3/31. Wound looks better; no gas escaping; some sero-sanguineous fluid in discharge; had severe reaction following first dose intravenously.

3/24/31. Roentgenogram: Fragments in good position. Silver wire in situ holding fragments of tibia. Ankle joint space increased due to extension through Steinman pin.

DISCUSSION

Dr. Roswell T. Pettit, Ottawa: I had quite a bit of experience with gas bacillus infection during the war. I was with the British Army in 1917, and during 1918 I was transferred to the laboratory section of the A. E. F. and given a portable laboratory for the purpose of taking it up as near the front lines as possible in order that we might make bacteriological examinations of the wounds before touched by the surgeons. I

had several assistants and we cultured over 2,000 cases making cultures on six or seven different kinds of media. Of course, we find comparatively few of these gangrene cases in civil life but gas bacillus infection was the real horror of the war. It never occurred to me that the x-ray would be of any value in the diagnosis of gas bacillus infection, but I can see now with the formation of bubbles of gas in the tissues that these accumulations of gas could probably be recognized more readily and earlier with the x-ray than with the finger by palpation.

I am sorry that Dr. Olin devoted so much time to the bacteriology of gas gangrene and left so little time for demonstration of x-ray pictures of some of these cases.

Dr. Harry A. Olin, Chicago: I have nothing to say outside of the fact that I investigated the bacteriology of this condition and it seems that the bacillus is the organism mostly found in this condition, but it never exists alone.

I was particularly impressed with the fact that gas bacillus is not as rare as we think. For instance, Dr. Jennings, in the last *Annals of Surgery*, April, 1931, considers that it is the most prominent factor in the production of appendicitis and its complications, and he has a series of twenty-five cases in which he has demonstrated gas bacillus infection. There is likewise a gentleman, who in a series of something like twenty-five cases of compound fracture, has found this condition and he uses the serum intravenously. However, it is thought that if the x-ray is used earlier you can not only save the life of the individual, but you can save a good deal of amputation. Most of the literature is just full of second and third amputations to save life, and I think if the x-ray were used earlier, with surgical treatment, many a limb and life might be saved.

HEMOLYTIC STREPTOCOCCUS BACTEREMIA WITH ENDOCARDITIS AND ARTHRITIS, FOLLOWING SCARLET FEVER

(Report of Case with Recovery)

MAXIMILIAN KERN, M. D.

Attending Physician, Edgewater Hospital, John B. Murphy
Hospital, Chicago,
and Oak Park Hospital, Oak Park, Illinois

CHICAGO

The increasing voluminous literature on acute and subacute endocarditis with particular reference to the so-called malignant or septic type—the one with which we are here solely concerned—would appear to have left no phase of this affection untouched. But so far no definite agreement has been arrived at regarding the various factors concerning its etiology and certain of its aspects.

While some authors consider both the acute

and the subacute types of bacterial endocarditis as merely different degrees of one and the same condition, there are reasons to accept acute septic endocarditis as a clinical entity distinct from the subacute form. The latter has more commonly been accepted as an endocarditis superimposed on a heart, the valves of which have been damaged by a previous disease of the rheumatic type.

We know that the onset, symptoms and course of the two affections need not necessarily be identical or even similar, an acute bacterial endocarditis suddenly involving a normal heart by the introduction of bacteria from a focus of infection, that may even have been latent.

The problem of so-called rheumatic fever in relation to infective endocarditis has by no means been fully solved. Although streptococci may be present in both, we have as yet no certainty that the two conditions involve one and the same type, so much so that recently the question was brought up regarding the possibility of mutation of different strains of streptococci in endocarditis.

Although the streptococcus hemolyticus may, and in several cases has been proven to be the causative agent of acute endocarditis, it has been established, at least to a certain extent, that mutation of the streptococcus hemolyticus into the streptococcus viridans is possible. The streptococcus viridans is the one most often found in fatal cases of acute and subacute endocarditis.

The whole problem is of special importance, because the correct therapy rests largely on its exact solution. Accordingly there is still a wide field for investigation. The following case may appropriately be submitted here before proceeding with a discussion of the involved points.

In this case we have one of acute septic endocarditis showing features not generally associated with that disease. As will be seen, the endocarditis was due to the streptococcus hemolyticus, which is not the usual causative factor. The fact that the patient made a good recovery, too, is of interest, as this disease almost invariably runs a fatal course. Thus Cowan¹ reports that out of 104 cases of acute endocarditis, 73 died in the hospital, 13 shortly after discharged from the hospital, 4 were "improved" and 2 were "very well." Only two patients were at work three years after the onset of the disease. Our case is interesting also because the favorable outcome

was, in our opinion at least, due to the administration of an autogenous vaccine which so far has not generally been credited with brilliant affects.

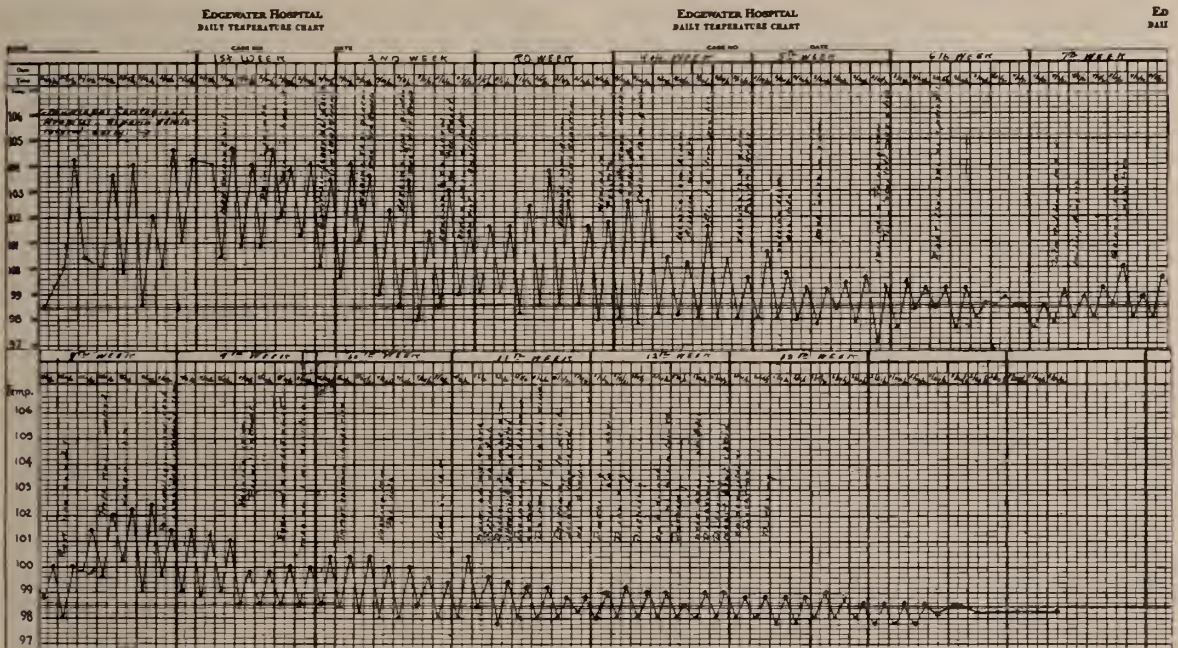
CASE HISTORY

R. S., male, white, American, student, aged 21, was admitted to Edgewater Hospital on February 23, 1931.

Personal History: He had gone through measles, mumps and influenza in childhood. January 19, 1931, he was taken ill with scarlet fever, and was sent to the Municipal Contagious Hospital January 22. There he developed sore throat and adenopathy, which subsided. He made an apparent recovery and was awaiting the termination of the prescribed period for discharge, when, on February 15, he suddenly began to

marked tenderness over the frontal and maxillary sinuses. An examination of the chest reveals a rapid heart with an audible soft murmur over the mitral valve. There are no petechiae or Osler's nodes.

Laboratory Findings: February 23: Urine; Sp. Gr. 1005, clear and straw colored, with acid reaction, a trace of albumin and urates. No microorganisms were found. Blood: R. B. C. 2, 720,000 W. B. C. 10,000; hemoglobin 64; color index 1.01: Neutro. polynuclears 88 per cent., small lymphocytes 10 per cent., eosinophiles 2 per cent. A blood culture again revealed streptococcus hemolyticus. February 24 the patient had a severe chill. On February 25 he complained of a severe pain in the cardiac region, for which a hypnotic had to be administered. The next day a prophylactic



vomit, and had a rise of temperature to 102°-105° F. He was treated at that hospital for post scarlatinal influenza. The patient was seen by me in consultation at about that time, and a blood culture was suggested to support a preliminary diagnosis of endocarditis. On February 22, the blood culture showed streptococcus hemolyticus. The next day he was transferred to the Edgewater Hospital.

Family History: The father gives a history of having been treated for "rheumatism" and of having been informed several years ago that he suffered from "heart murmurs." The mother has hypertension and arteriosclerosis. One sister has hypothyroidism with the characteristic symptoms of slow pulse, moderate obesity, dysmenorrhea; two other sisters give a negative history.

Physical Examination: The patient appears acutely ill and toxic and complains of headache, sore throat, acute pain in the cardiac region. The spleen is palpable and tender. There is a slight swelling of the ankles. Pulse 120-130; temperature 104.8° F. There is

dose of 5,000 units of scarlet fever antitoxin was administered. An autogenous vaccine was made up from the blood culture and administered intradermally. Cultures from the throat yielded repeatedly large numbers of streptococcus hemolyticus, corresponding in cultural characteristics with those isolated from the blood. The first dose of the vaccine was 0.1 cc (two minims). This gave a marked skin reaction within twenty-four hours. During the ten weeks stay in the hospital altogether eighteen injections of the vaccine was given, the amount of the dose being gradually increased to ½cc. They were always followed by a positive skin reaction and a pronounced drop in the temperature. A second injection of scarlet fever antitoxin was given intravenously March 26. On June 27 a tonsillectomy was performed under local anesthesia and a positive blood culture for streptococcus hemolyticus was obtained from the tonsils.

The accompanying chart shows the patient's temperature during his stay in the hospital. The varia-

tions following the injections of vaccine and antitoxin are particularly noticeable during the later stages, when a low grade fever was persistent.

March 25. The patient developed severe pain in the left wrist, which was aggravated by motion, with swelling and marked tenderness. X-ray examination revealed erosion of the articular surfaces with some bone destruction. Periostitis and osteomyelitis were ruled out, and the condition was apparently one of suppurative arthritis with atrophic changes in the wrist. April 4, polyarthritis developed; the knees, as well as the left ankle and wrist being affected. Sodium cacodylate was administered intramuscularly in three grain doses daily. Sodium salicylate was administered by mouth in ten grain doses four times daily. This treatment was followed by local diathermy, beginning May 1, alternating daily with general ultraviolet irradiation. The pain was greatly relieved and motion of the joints increased. The low grade fever still continued with intermissions as shown on the chart. The heart murmur persisted, although less marked, and the general condition of the patient seemed greatly improved. May 4, the blood culture was negative. The spleen was still palpable, there was no impairment of movement in the joints, but the tonsils were still enlarged and culture from the throat was positive for streptococcus hemolyticus. The urine still showed several pus cells, a few red blood cells, but no albumin. The blood pressure was 120/60.

The blood picture deserves special mention. The red blood cells, at first 2,800,000, varied during the acute stage of the disease from 2,700,000 to 3,900,000. By the beginning of May they reached 4,000,000, the highest figure recorded being 4,050,000 on May 12. The white blood cell count on February 23 was 10,000; a few days later (Feb. 27) it reached 14,900 and varied between 10,200 and 12,600. On May 4 the count was 10,900 and on May 12 13,100. Leukocytes varied from 88 per cent. (February 26 and March 4) to 64 per cent. on May 4. May 12 the figure was 58 per cent. Very characteristic was the lymphocyte count. Beginning with 18 per cent. Feb. 19 it varied down to 6 per cent. toward the end of the case. The small lymphocyte count on Feb. 24 was 14 per cent., on Feb. 28, 24 per cent.; 10 per cent. on March 4; 30 per cent. on March 13; 18 per cent. March 23; 28 per cent. March 27; 30 per cent. April 1; 44 per cent. April 10; 36 per cent. May 4; 22 per cent. May 12.

Summing up, we have the case of a young man with a history showing influenza, measles and mumps, who, during the convalescent stage of an attack of scarlet fever developed sore throat suddenly with a high temperature with sharp cardiac pain, marked anemia and leukocytosis, suggesting an exacerbation of a latent tonsillitis resulting in acute septicemia and endocarditis. The therapeutic test of injections of autogenous vaccine, prepared from cultures of streptococci obtained from the blood, constantly showed re-

missions of the fever and finally led to recovery. Although the blood examinations were positive for bacteria, it must be remembered that even in chronic subacute bacterial endocarditis a series of negative blood cultures may be obtained which, however, does not exclude the presence of the disease. In this case the streptococcus was obtained from the throat on several occasions. The clinical course of the case suggests that the endocardial complication resulted directly from the lighting up of the more or less latent tonsillitis by the attack of scarlet fever. This opinion is not inconsistent with the latest views of investigators who have studied streptococcal endocarditis.

Discussion. The usual clinical data observed in cases of acute and subacute bacterial endocarditis including the pathology, are so well covered in the extensive literature and in text-books that their enumeration would be superfluous. It will not, however, be amiss to discuss some of the unusual etiologic and other features which have appeared in recent literature.

Investigation of any disease previous to the appearance of bacterial endocarditis has a twofold object. First, the determination of the portal of entry of the infective agent, and, second, the estimation of the predisposing effect of antecedent infections, especially those of the so-called rheumatic fever type. Since Osler² first described the clinical picture of subacute bacterial endocarditis in 1908, there has been an increased prevalence of both the acute and subacute types, and there is a division of opinion regarding the view that bacterial endocarditis is a distinct disease entity, which must be distinguished from endocarditis accompanying acute or subacute rheumatic fever, and that the acute ulcerative or malignant type is to be differentiated from the subacute. Thompson and Thompson,³ who are among the latest to make an extensive research into the nature of these conditions, say that the specific form of rheumatism has a predilection for the tonsils whence it spreads either directly or by its toxins to the circulatory system. There is no definite agreement, however, that the cause is a specific streptococcus, though the consensus of opinion points to it as the chief causative organism.

Bacteriology of Septic Endocarditis. The literature shows that there may be several bac-

terial causative agents. The organisms most frequently held responsible are streptococci and pneumococci. The gonococcus and bacillus influenzae are responsible for a certain number of cases. Thompson and Thompson cite a few cases of malignant endocarditis in which the streptococcus pyogenes (hemolyticus) was found, especially in those cases which are fulminating and rapidly fatal.

Bacillus influenzae is a rare finding: Cabot's⁴ fatal case of acute endocarditis showed the bacillus influenzae in the blood during life and at autopsy.

Nevertheless, the causal factors are not definitely determined and Hektoen⁵ has recently stated that the next phase in our knowledge of acute endocarditis will be the study of its causative bacteria by cultural methods and its experimental production.

So far as may be judged from the available information, the streptococcus is apparently the agent in the very large majority of cases. But here some interesting questions arise.

First, as to the type or strain of streptococcus. Although the streptococcus viridans is usually considered as the agent, and is the type isolated in most fatal cases of acute septic endocarditis and in about 80 per cent. of fatal cases of sub-acute bacterial endocarditis, Thompson and Thompson³ after a thorough study of the literature, state that there are at least forty distinct varieties of streptococcus viridans, while most writers merely refer to the organism found clinically as the streptococcus viridans. Further studies will have to be more precise in regard to the specificity of the prevalent or causative microbe not only in endocarditis, but also in the various rheumatic lesions, including the cardiac affections following infections.

Secondly, there is the very interesting question of possible mutation of the streptococcus hemolyticus into the streptococcus viridans. Clawson⁶ and others have done experimental work on these possible mutations. In the case of acute malignant endocarditis reported by Howell, Portis and Beverley⁷ it is stated that the streptococcus viridans was isolated three times from the blood. In Dominguez and Bizzozeros⁸ fatal case of malignant endocarditis the streptococcus hemolyticus, isolated from the blood after death, was non-virulent for test animals. They also refer to the

transformation of the streptococcus viridans into the streptococcus hemolyticus with changes in virulence. In Cerosoli's⁹ case of malignant endocarditis the streptococci found in the blood four times during the two months that the patient lived were an-hemolytic and a viridans during the first month, but in the second month it changed to hemolytic and aviridans.

The question of mutation also is treated in Rosenow's¹⁰ work who, as far back as 1912, considered that the streptococcus viridans, which had been isolated from infective endocarditis, was a modified pneumococcus. As far as we know, however, Rosenow's work does not appear to have been confirmed by others.

It seems, therefore, a matter of speculation how often the streptococcus viridans found in the blood at autopsy during the final stages of an acute or subacute septic endocarditis is a mutation form of streptococcus hemolyticus. In our own case this mutation had apparently not taken place, as no streptococcus of the viridans type was isolated.

Rheumatic Fever and Endocarditis.—The question of antecedent rheumatic infection has already been touched upon, and is one that has always arrested the attention of students of acute and sub-acute bacterial endocarditis. Leech¹¹ in fifteen cases of endocarditis in children in which the streptococcus viridans was obtained from the blood and all of which ended fatally, found that seventy-five per cent. were superimposed on rheumatic lesions of the heart valves.

Thompson and Thompson, following their exhaustive research of the literature cite Horder,¹² who expresses the view that when an infective endocarditis follows upon a rheumatic endocarditis, it seems clear that a new factor has arrived in the disease process comparable with the pyogenic infections (usually streptococcal) which not infrequently complicate scarlet fever. It is rheumatism complicated with streptococcal or other infection of the endocardium. These writers also point out that the consensus of opinion is that subacute bacterial endocarditis is a distinct disease entity, and must be distinguished from endocarditis accompanying acute or sub-acute rheumatism and from malignant or septic endocarditis. It appears to be undoubted that acute infective rheumatism involving the heart valves, or, in fact, any case in which the heart

valves have been impaired by previous infectious disease, does predispose to subacute endocarditis, although such predisposition is not necessarily a factor in acute bacterial endocarditis. Zischinsky¹³ who reported ten cases of scarlet fever complicated by endocarditis in which seven of the patients died, is of the opinion that the diagnosis of endocarditis due directly to scarlet fever can be proved only by necropsy.

CONCLUSIONS

From the foregoing consideration we are led to the conclusion that in our own case the acute endocarditis was the direct result of involvement of the heart by streptococci (or their toxins) originating in the tonsillar infection which developed as a recrudescence sore throat, a condition which occasionally develops as a sequela of scarlet fever. None of the symptoms of a subacute rheumatic (streptococcal) origin were present, and the arthritic manifestations which occurred in the course of the case were due to the same infective agent as that of the endocarditis. While there was nothing to disprove the existence of previous injury to the heart, there was no clinical evidence of its presence until well past the attack of scarlet fever and tonsillitis.

Incidentally, the case supports the view expressed in the Report of the (British) Special Committee Upon Rheumatic Disease in Children (1926)¹⁴ that in children attacked by scarlet fever whose tonsils have not been removed, rheumatic fever lesions involving the heart are likely to be more severe than in those whose tonsils have been removed.

Mention should be made regarding the use of autogenous streptococcal vaccine in this case.

No successful treatment has yet been discovered for the various forms of streptococcal carditis by vaccine therapy and according to Thompson and Thompson it has been tried with little success. They state that if the actual species of the streptococcus causing the various cardiac conditions were definitely identified and isolated, more specific and definite therapeutic results might be obtained. An autogenous vaccine as used in our case may, therefore, be the nearest approach to this ideal.

SUMMARY

1. The study is based on one case, which,

however, is apparently clear cut as regards the etiology of septic endocarditis.

2. Streptococcal endocarditis, especially of the hemolytic type, is almost invariably fatal.

3. The apparently complete recovery of even one case of such gravity, by an autogenous vaccine made after the identification of the causative agent, is sufficiently encouraging to justify further trials in similar cases.

4. The high mortality of streptococcal endocarditis demands earnest scientific research, the results of which, under our present advanced knowledge of microbiology, should clear up many obscure problems and thereby lay the foundation for a rational and successful therapy.

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SECONDARY ANEMIA*

RICHARD F. HERNDON, M. D.,
SPRINGFIELD, ILL.

Anemia of one sort or another is probably one of the most common conditions that the general practitioner, surgeon or specialist is called upon to consider. In normal healthy individuals the corpuscles and hemoglobin of the blood vary within remarkably narrow limits. However, when we make any serious routine effort to determine the condition of our patient's blood it is surprising how frequently a significant reduction in one or both of these elements is

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found. Undoubtedly many of the indefinite cases of neurasthenia, and the various states of malnutrition, weakness and below parness result from only a moderate anemia which has been present for a long period of time. Functional and economic recovery after surgical procedures and medical regimes is all too often prevented by the persistence of a low grade anemia. Proper treatment of this will often cause a striking improvement in the patient's condition. It has been the steadily increasing recognition of these facts that has stimulated research and led to the recent advances in our concepts of anemia. Their very frequency justifies us in reviewing their established features.

Mechanism. Three mechanisms or their combinations may be concerned in the production of anemia.

1. Blood loss or hemorrhage.
2. Diminished production of blood.
3. Increased destruction of blood.

(Hydremia as judged by the ordinary standards of investigation would appear to be anemia but can usually be distinguished on clinical grounds.)

In a given case it is helpful to know which of these factors is of greatest etiologic importance or their relative importance when they act in combination. In ordinary clinical work the activity of the bone marrow is judged by the presence of immature cells in the peripheral circulation. In specimens fixed and stained by the usual methods the chief evidences of immaturity are the presence of nucleated, polychromatophilic, and, probably, stippled red cells. None of these forms have been generally studied with a view of obtaining a quantitative index of bone marrow activity. However, with the use of vital stains another immature cell, the reticulocyte, is easily demonstrated and has been intensively studied. Their number is generally considered to be the most reliable measure of the production of blood and so may be taken as an index of bone marrow activity. Normally they make up about 0.8 per cent. of the red cells.

On the other hand the icteric index, except in patients with hepatic lesions or obstructed biliary passages, is a measure of the breakdown of hemoglobin and may, therefore, be taken as a guide or index of the destruction of red blood cells. It is usually five, with normal variations between two and ten. So that in a given case if we know

the degree and progress of the anemia, the reticulocyte count and the icteric index we are in a fair way to judge the origin of the anemia and are in a good position to prescribe treatment and give a prognosis. Douglas and Tannenbaum¹ have recently published a very interesting discussion of secondary anemia based on these criteria.

Classification. The conditions that may cause secondary anemia are practically as numerous as those that may affect man. They are variously classified according to the writer but it seems simpler to adhere to the mechanisms already described. Thus we have three types.

Anemia Due to Blood Loss or Hemorrhage.

The anemia of blood loss or hemorrhage is to be recognized by the recognition of the bleeding. In acute cases the blood shows evidences of active regeneration. In fact, an acute hemorrhage is one of the most powerful stimulants of bone marrow activity. In chronic cases blood production may be very considerably impaired, probably due to a marked reduction in the iron reserve as well as nutritional depression of the bone marrow. In cases with good regeneration the reticulocyte count will be high and in cases with poor regeneration it will be low. In both acute and chronic hemorrhage the icteric index will be normal or low.

I would like to emphasize once more a fact we are all likely to forget, namely, that chronic, recurrent or persistent loss of blood, particularly from the gastro-intestinal tract, is much more frequent than any of us suspect. Among the conditions that may cause it are carcinoma of the stomach, duodenal ulcer, benign ulcer of the small intestine or cecum, carcinoma of the colon, polyps of the colon and hemorrhoids. It should also be stressed that these conditions may be present with few if any abnormal symptoms and in the presence of entirely negative roentgenologic examinations. The presence of bleeding, however, can be recognized by repeated examination of the stools.

Anemia Due to Diminished Blood Production.

Anemia that is wholly or predominantly due to diminished blood production can usually be easily recognized from the general picture. In it there is a marked reduction in hemoglobin with a low color index and achromia. There is little change in the red cells themselves, some variation in size, but little variation in shape

with a tendency for the predominating cell to be slightly smaller than usual. The young cells, the reticulocytes, nucleated cells, polychromatophiles and stippled cells are few in number or absent. The polymorphonuclear leucocytes also tend to be reduced in number and to have an abnormal number of lobulations, which means that they are old. The icteric index is, of course, normal or low.

In these cases the bone marrow usually shows some atrophy or gelatinous degeneration, though there may also be areas of hyperplasia. If the young cells in the blood are increased and the level of the anemia is not rising, one should look for evidence of hemorrhage.

This type of anemia makes up the great majority of the cases we ordinarily see. It includes:

Infections of all types, including those with intestinal parasites.

Intoxication from poisoning—Lead, mercury, arsenic, benzol.

Intoxication from diseases—Nephritis, hepatic cirrhosis, gastro-intestinal disturbances, malignancy.

Pregnancy.

Senility.

Disturbances of glands of internal secretion, as myxedema.

Deficient nutrition—Milk diets, particularly at the end of infancy, not infrequently in peptic ulcer; the peculiar diets of recluses and the aged.

These two types of anemia, that is, anemia due to blood loss and anemia due to deficient blood production, are usually called simple anemias because no radical change has taken place in the type of blood formation such as occurs in true pernicious anemia. Neither is distinct evidence of blood destruction seen in these simple anemias which is in contrast to pernicious anemia and the hemolytic anemias. To be sure, in some infections, notably sepsis and arthritis, there is often some acute blood destruction though the evidences of it are not manifest and subsequently the depressed marrow activity prevents regeneration. The patients are pale, not icteric, and their symptoms are those of anemia along with the symptoms of whatever factor is causing the anemia. The reason they seem sicker than pernicious anemia patients is that in either instance they suffer proportionally to their hemoglobin level rather than to their red cell level.

Anemia Due to Increased Blood Destruction.
We now come to the third type of anemia, that

is, anemia due wholly or predominatingly to increased blood destruction. Here again we have a fairly characteristic general picture that is usually easily recognized. The icteric index is high and the patient himself icteric or yellowish. There is a relatively slight reduction in hemoglobin with a relatively or absolutely high color index. The predominating red cell tends to be slightly larger than normal, but with these macrocytes are found fragmenting cells and microcytes. The immature red cells are increased and with them there is a leucocytosis with increased numbers of young marrow cells. In addition there is usually enlargement of the spleen and liver.

This variation in the size of the erythrocytes which I have mentioned seems to be quite definite and of considerable diagnostic significance. Haden² in 1923, and more recently Murphy and Fitzhugh³ have given us accurate and fairly simple methods for its determination.

It will be recalled that when simple anemia due to known cause was discussed, it was mentioned that a relatively slight degree of blood destruction occurred in some of these cases. When this destruction becomes very distinct we refer to the cases as forms of hemolytic anemia. Such conditions may be either acute or chronic. When true pernicious anemia is excluded the hemolytic anemias make up only a very small proportion of those usually seen. They occur most frequently during the course of:

Sepsis—streptococcus sepsis particularly, as subacute bacterial endocarditis, pneumonia, malaria, syphilis.

Fish tapeworm.

Pregnancy.

Poisoning by acetanilid, phenol, benzol and nitrobenzol, toluol and trinitrotoluol, analin and its derivatives.

These cases differ from true essential hemolytic anemia in that their course is shorter, the enlargement of the spleen is less, the increase in the bone marrow activity is not so marked, and the fragility of the red cells to salt solutions is not increased.

Thus as Minot⁴ says, "Cases of anemia due to known cause such as chronic sepsis may take on the features of chronic hemolytic anemia. Such cases may resemble those in which the cause is not recognized, perhaps because the cause in general is similar, being recognized in one instance and not in the other. From this we may see what is so true in all blood conditions, namely,

that through atypical cases one condition approaches another, and that the anemias are dependent upon the effect of the reaction caused by a known or unknown agent on the blood forming and blood destroying tissues."

Prognosis. The prognosis in secondary anemia depends upon the cause, duration and intensity of the anemia and the degree of involvement of the bone marrow.

TREATMENT

It is obvious that little can be expected in the treatment of secondary anemia until the cause has been recognized and removed. However, even when this is done spontaneous recovery is often slow and not always complete. Help is usually necessary. The work of Minot and Murphy, Whipple and Robschey-Robbins, of Castle, Hart, Steinbock and others has given us a much more rational and encouraging outlook than ever before. Nevertheless, an enormous amount of investigation will still be necessary before a really satisfactory conception can be reached. At the present time it is logical to deduce that, in addition to rest and fresh air, first place should be given to an adequate, well balanced diet rich in vitamins and those foods which favorably enhance blood formation, and that to this should be added large doses of iron. Each case must be looked upon as an individual feeding problem, giving consideration to all aspects of the patient including his weight and the state of his gastrointestinal tract. But we must still wait future observations to tell which diets are best for the different sorts of anemias and the mechanisms by which they act. Further it has been shown that a long period of time is necessary to permit the formation of those hemoglobin building factors which precede the formation of hemoglobin itself, so that whatever methods are used they must be persisted in for some time. It may be added that more cases of anemia will probably be cured in the future by diet and its derivatives than by other measures.

The foods that are of most value in blood building are the meats, green vegetables and fruits. The starches and fats do not seem to be of any direct importance. Of the meats liver, kidney and red muscle meat are preeminent. Whole liver seems to have about five to ten times the potency of liver extract in secondary anemia.

It seems to be of especial value in cases of failure of regeneration after loss of blood. There may be some reason, based on Castle's work and clinical observation, to think that liver extract might be helpful in those cases of secondary anemia associated with organic disease of the stomach, because an activating substance in the stomach wall may be absent in such cases. In regard to the green vegetables, it is interesting to note that Whipple and Robschey-Robbins have concluded that their mineral content is more important than the chlorophyll nucleus. The most valuable fruits seem to be oranges, grapefruits, apricots, peaches and prunes. Any possible deficiency of the vitamins may be easily overcome by the addition of yeast and cod liver oil.

All the recent research on secondary anemia has served not only to emphasize the need for iron but also the desirability of giving larger doses than we formerly used. In anemias of any appreciable severity it now seems desirable to give about the equivalent of a gram of metallic iron a day. This seems to be more efficient in an acid solution and in a soluble form. Ferric citrate or ferric ammonium citrate in doses of 90 grains a day seems to be as good a preparation as any. Iron is particularly necessary in anemias due to chronic blood loss. There is both experimental and other evidence that iron supplements the action of other substances, e.g., iron and liver together are more effective than iron alone or liver alone.

Of the other features of the treatment of secondary anemia that might be worth consideration I believe there are two which should be mentioned. First, I think that the pendulum of opinion has swung too far away from transfusions and that many severe cases could be more quickly corrected or prepared for necessary surgical procedures by one or more transfusions. And finally, that there is at present no apparently good reason for the use of arsenic, splenic extract, bone marrow, or intravenous or intramuscular medication.

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KIRCHNER PIN IN FRACTURES OF LONG BONES

ARTHUR H. HAUBER, M. D.

CHICAGO

In a series of fractures of the femur and tibia, I have been using the mechanical con-



Fig. 1 A

Fig. 1 B

Fig. 1 A, Case 1. Oblique fracture of upper third in young girl before reduction by Kirchner pin method.

Fig. 1 B, Case 1. The same about two months after reduction, bony union, no demonstrable shortening. At no time a cast or splint used.

trivance of Professor M. Kirchner of Koenigsberg, Germany, to secure extension.

The apparatus consists of a span-buckle and a thin steel pin, about the size of the old-fashioned hat pin, which is driven through the bone by means of an electric motor. After this



Fig. 2 A

Fig. 2 B

Fig. 2 A, Case 2. Intertrochanteric fracture in woman 70 years old. Abduction with Kirchner pin extension used.

Fig. 2 B, Case 2. Perfect alignment secured and function result practically normal. No cast was used.



Fig. 3 A

Fig. 3 B

Fig. 3 A, Case 3. Spiral fracture extending from greater tuberosity almost half way down the shaft.

Fig. 3 B, Case 3. An almost 100 per cent. functional result secured in man middle aged. Went to work as an electrician after four months from date of injury. A posterior supportive splint was used when this radiograph was taken before bony union was complete.

manoeuvre the pin is put under tension with a specially constructed instrument in order to give

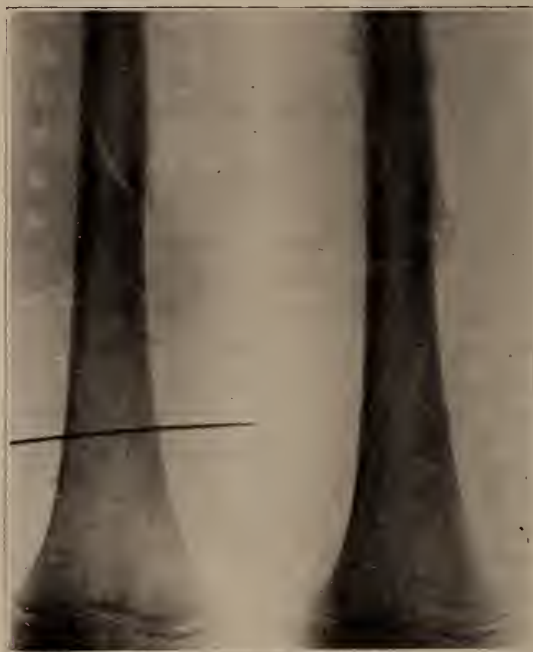


Fig. 4 A

Fig. 4 B

Fig. 4 A, Case 4. Shows pin in situ and fracture reduced. Pin put in somewhat high up from distal extremity to avoid any possible injury to epiphysis of bone in young person. The pin is not at right angle to the bone, but this is of no consequence.

Fig. 4 B, Case 4. Bony union complete with perfect function and mobility. No apparent shortening.

the thin steel wire, which is all it really is, sufficient strength to withstand the application of weights by rope and pulleys.

I have found this method superior to the traction secured by adhesive tape, or Steinman's nail and tongs. It has several advantages. Traction by adhesive tape affords pull on the skin, then on the underlying muscles and lastly on the bone. Very often the muscle pull is on both ends of the fractured bone and therefore much pull is lost. There are other disadvantages to adhesive tape traction which are obvious to those doing orthopedic surgery. The Steinman nail and tongs mutilate the tissues, cause much pain and infections. All these ill-effects seem to be absent in the Kirchner pin method.

The Kirchner pin requires less weight to bring the ends of the bones into apposition, because the pull is directly on the lower fragment, and usually no more than six to eight pounds in chil-



Fig. 5 A (2 views)

Fig. 5 A, Case 5. A. P. and lateral projections of a comminuted fracture middle and upper thirds of femur in child.



Fig. 5 B

Fig. 5 C

Fig. 5 D (2 views)

Fig. 5 B, Case 5. Reduction of fracture by means of skeletal traction with Kirchner pin, showing pin in situ in A. P. view.

Fig. 5 C, Case 5. Lateral view of X-ray plate picture showing span buckle or "Horse Shoe" (as the little folks are apt to call it) in position.

Fig. 5 D, Case 5. Pin removed and bony union

almost complete at end of 33 days from date of injury.

Fig. 5 D, Case 5. Lateral view showing slight anterior convexity which is natural for child's femur 4 years old. There is no demonstrable shortening present and motion of femur is practically normal. This femur should be ready for weight bearing with safety at the end of ten weeks.

dren and ten to fifteen pounds in adults are used. The pin is left in one month to six weeks and no plaster cast or other support is needed. A few sand bags hold the bones still enough, and by means of an overhead frame (Balkan frame) the patients can adjust themselves for cleaning and use of bed-pans. Usually only one hypodermic of morphine is used the first day and no more afterwards. In some cases it is entirely omitted. Removal of the pin is easy and then a light cast or splint may be used. However, I have done away with all these appurtenances. Five days after removal of the pin the bone, by x-ray, shows no trace of the hole in the bone. The skin has small scars $\frac{1}{4}$ inch in diameter. Just above the epicondyles in femur fractures seems to be the proper place for the pin and through the os calcis in tibia fractures.

I have used this method in intracapsular fractures of the femur, and regardless of location of fracture, secure a good functional result with from $\frac{1}{4}$ to $\frac{3}{8}$ inch shortening. This much seems unavoidable because of absorption of dead osseous tissue at the site of the break.

2800 Milwaukee Avenue.

DUPUYTREN'S ABSCESS

J. E. BELLAS, M. D.

PEORIA, ILLINOIS

Dupuytren is a name well known in surgery and intimately associated with a certain leg splint, a type of ankle fracture, and with a contracture of the palmar fascia and its digital prolongations, but its association with a certain type of pelvic cellulitic infection is less familiarly recognized.

Pelvic infection can be conveniently divided into intraperitoneal and extraperitoneal. The intraperitoneal infections are, of course, salpingitis, salpingo-oöphoritis, pelvic peritonitis, abscess in the pouch of Douglas, and, occasionally, an appendiceal infection. Extraperitoneal infections are commonly parametritis, and less commonly extension from a psoas abscess, perinephritic abscess and rarely inflammation of the connective tissues following cystoscopic manipulations, for example; ureteral perforation and injection of sodium iodide through such perfora-

tion. It is very important that these two general types of infection be differentiated from one

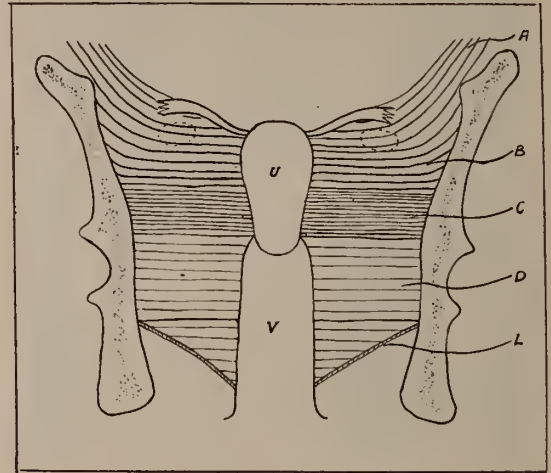


Fig. 1.

Figure 1. Frontal section through the pelvis (diagrammatic) to show the lateral connective tissue.

- A—Infundibulopelvic ligament.
- B—Intraligamentary connective tissue.
- C—Lateral parametrium.
- D—Paravaginal connective tissue.
- L—Levator ani.

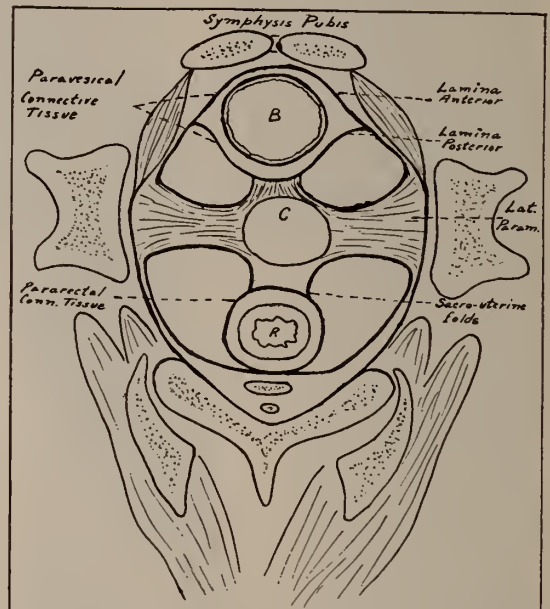


Fig. 2.

Figure 2. Transverse section at level of internal os to show anterior and posterior ramifications of the pelvic connective tissue.

- B—Bladder. C—Cervix. R—Rectum.

another, as the surgical approach when indicated differs, and grave consequences can follow upon instituting the wrong procedure in a given case.

The term pelvic cellulitis is familiar to all and in a general way indicates inflammation of the pelvic connective tissue, but its anatomical manifestations from the point of view of localization and surgical treatment are frequently not appreciated. To understand more clearly its clinical and surgical features, a knowledge of the anatomy of the pelvic connective tissue with all its ramifications is essential.

Pelvic cellulitis may lodge in any part of the connective tissue distribution but this paper is more concerned with that which involves the lateral connective tissue, namely: the paravaginal, the lateral and the intraligamentary parametrium, so as to form a prominence extraperitoneally above Poupart's ligament.

Etiology: This condition notoriously results from the induction of abortion on the part of the laity with the serious sepsis that may follow, but it may arise even in clean cases of therapeutic abortion where every aseptic precaution has been undertaken. It may also develop from a flare-up of a previous dormant parametritis. The offending organism is usually the streptococcus which explains the severe septic course that these cases may run.

The following case-history is typical of the development and progress of such cases.

The patient, Mrs. A. K., was a woman of 29 years of age for whom a therapeutic curettage had been done for a pernicious hyperemesis gravidarum which all the accepted methods had ceased to check. Following the curettage, the patient developed pain and tenderness on the left side which became quite localized. There was no pain on the right side, or in the midline. Gradually, a mass began to be felt above Poupart's ligament extending laterally to the left loin. The patient developed pain at the end of micturition, and a soreness in the kidney region. Urinalysis showed albumin, three plus; pus, four plus.

By the ninth day a definitely localized mass could be felt and in continuity with this, a cord of induration extending laterally towards the left loin could be palpated. A vaginal examination showed the right fornix negative. The left fornix disclosed a hard, indurated crescentic concavity extending from the side of the uterus to the pelvic wall. By bimanual examination, the mass above Poupart's ligament could be felt in direct continuity with the induration in the left fornix. No fluctuation could be elicited.

Diagnosis: Dupuytren's abscess or parametrial abscess. It was decided to operate for this condition and accordingly an operation was done

on the tenth day, by the abdomino-vaginal method. The drainage tube was left in for six weeks and the patient made an uneventful recovery.

It is the symptom-complex of pain with micturition, pain in the kidney region with the presence of pus in the urine, that leads the uninitiated to order a cystoscopic examination and ureteral catheterization. Pus in the urine is due to a cystitis aroused by the contiguous inflammation. Indeed, a perforation into the bladder has been known to occur and to give rise to a large amount of pus in the urine. Pain around the region of the kidney is due to extension of some of the inflammation along the cellular tissue planes.

Surgical Methods: Two methods have been available, the vaginal and the abdominal.

The vaginal method attempts through a posterior colpotomy wound to dissect laterally towards the region of the abscess or inflammation, with the insertion of a tube for drainage. This method is necessarily a blind method with grave danger of injury to the ureter, and uterine artery, and with the possibility of a perforation into the peritoneal cavity. One patient that came under my observation died from general peritonitis as a result of the vaginal method being employed. This route is further discounted by the fact that the drainage tube frequently slips out which necessitates painful reinsertion, little appreciated by the patient.

The abdominal method is an extraperitoneal method that gives better exposure but has the disadvantage of not establishing dependent drainage. Convalescence is therefore prolonged and disappointing.

The combined abdominal and vaginal method that I saw practiced in the Kermauner Frauen Klinik of Vienna offers a method that combines the advantages of both the above without including the disadvantages of either. This is undoubtedly the best procedure. This gives good exposure, avoids blind dissection and establishes drainage abdominally and vaginally.

Technique: An inguinal incision is made above and parallel to Poupart's ligament over the summit of the abscess or induration. The aponeurosis and abdominal muscles are split and

separated to expose the preperitoneal areolar tissue, and the reflection of the peritoneum. The latter is pushed upwards out of the way, protected by gauze, and the outline of the parametrial mass defined. (In the case above described, the broad ligament was one and one-fourth inches thick, hard and indurated and a tapering cord-like extension passed laterally towards the left loin). The field is protected by

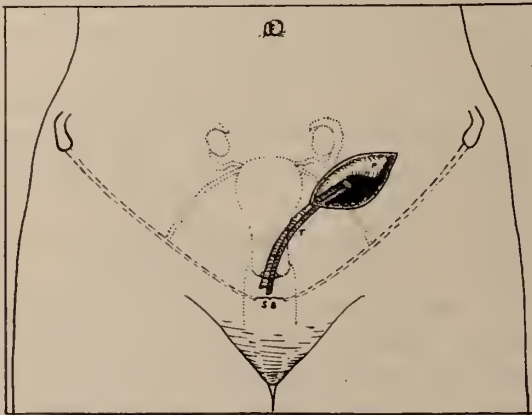


Fig. 3.

Fig. 3. Showing location of incision and position of drainage tube. (Semi-diagrammatic.)
P—Peritoneal reflection displaced upwards.
T—Split rubber drainage tube.
S. B.—Symphysis pubis.

gauze and a shallow incision is carried into the mass to allow blunt finger dissection along the track of the inflammation.

In the case of an abscess, after the pus is drained, the finger easily passes along the abscess cavity to its most dependent point. In the presence of the "woody" type of inflammation before its resolution into pus, the interior of the mass is friable enough to permit passage of the finger along the right plane. By means of bimanual examination, the dissecting finger can easily be guided to the vaginal finger behind the cervix without fear of injuring either the ureter, or the uterine artery. Under the guidance of the dissecting finger, or of a blunt forceps, a transverse posterior colpotomy incision is made behind the cervix. A semicircular stiff rubber drain is inserted abdominally to emerge along the created tract into the vagina, the concavity of the tube being made to face the uterus to prevent pressure necrosis effects upon the ureter, or uterine artery. The buried upper end of the drain is fixed by a silkworm gut suture, the ends

of which are passed through the abdominal wall and skin on each side of incision and tied to one another over a rubber tube. This effectually prevents the vaginal drain from slipping out. Finger dissection is done to establish a canal in the lateral inflammatory extension, and a Penrose drain is inserted into this canal and fixed to the skin. The skin is closed loosely around the drainage tube.

After treatment: The abdominal Penrose drain is not removed until the abdominal drainage has ceased or has materially subsided. The vaginal drain is left in for six weeks to make quite certain that no secondary recrudescence of remaining inflammation occurs. Dressings are applied above while needed; antiseptic vaginal douches are given daily after five days. As soon as the patient is able (ten to fourteen days) she is encouraged to get up and be around, as the upright position favors vaginal drainage.

Chronic invalids, perhaps for life, have been made where treatment has been delayed or where an intraperitoneal operation has been done as a result of a false conclusion. Sometimes only the ultimate rupture of the abscess above Poupart's ligament has pointed the way to the proper course of treatment.

SUMMARY

1. Dupuytren's abscess is an extraperitoneal parametrial abscess forming a prominence above Poupart's ligament.
2. The infection is streptococcus in nature and usually follows abortion, criminal or therapeutic.
3. Knowledge of the anatomy of the pelvic fascia aids clinical and surgical appreciation.
4. A typical case-history is reported.
5. Early surgical treatment is advisable to prevent chronic invalidism and the abdomino-vaginal extraperitoneal operation is the procedure of choice.

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THE CHALLENGE OF SYPHILIS*

ANDY HALL, M. D.

State Director of Public Health

SPRINGFIELD, ILL.

Perhaps no other single public health problem is of greater importance and magnitude than syphilis. This disease causes a vast amount of physical and mental delinquency. The volume of mortality listed under the title of syphilis and its well established sequelae falls far short of that for which this disease might reasonably be held responsible.

The most pathetic result of syphilis is blindness. Royer declares that 15 per cent of the blindness in the U. S. and a much higher percentage of impaired vision is but a manifestation of leptic infection. Speaking before the Social Hygiene Institute at Fort Worth, Texas, last fall, he said:

"It is safe to say that approximately 15 per cent of all blindness in America is due to syphilis, and, for every case of blindness traceable to syphilis physicians, health workers and social groups meet a still greater number, certainly several times as many, whose vision has been seriously impaired because of the ravages of this disease."

In Illinois 3,517 people were blind pensioners in 1928 and it is quite probable that a considerable number of blind persons fail to qualify for pensions under the present law. It seems, therefore, that syphilis is the cause of more than 500 cases of blindness in this State which cost the government \$200,000 per year, and deprive the individuals from normal happiness and society from the full productive efforts of normally healthy people.

One out of each 7 men and 1 out of each 17 women admitted to the State hospitals in Illinois are victims of general paralysis. The number of general paralysis patients admitted to State hospitals is second only to the number admitted because of dementia praecox. For the last eight years an average of 557 paretics have been admitted annually, a matter of nearly 15 per cent of total admissions. On the other hand, the very best estimates indicate that not more than

26,000 new cases of syphilis occur annually in Illinois. Thus it appears that 15 per cent of the patients of State hospitals are recruited from a group that makes up less than one-half of one per cent of the population. These are the patients who are known to have become public charges because of syphilis.

The damage done to the general population by the 26,000 syphilitic infections per year is only partially expressed by the number of blind and those who become inmates of State hospitals. Several investigators, including Holland, Palmer and Williams, have shown that from 7.6 to 12.8 per cent. of stillbirths are due to syphilis. Browne considers that syphilis is the commonest cause of premature labor. The significance of these figures is clear when it is shown that 4,500 stillbirths and 2,500 infant deaths due to premature birth occur annually in Illinois. Estimating that 10 per cent of the stillbirths and 25 per cent of the prematurities are caused by syphilis, these figures indicate that well over 1,000 infant lives are lost annually in the State because of syphilis.

This loss can be almost wholly prevented by appropriate treatment. Moore, of Baltimore, studied the history of 449 women who were discovered during pregnancy to have a positive Wassermann. Of the children born to the 169 who received no anti-syphilitic treatment only 40.8 per cent. were healthy. Of the children born to the 102 who had inadequate treatment, 60.7 per cent. were healthy. Of the children born to the 178 who had adequate treatment, 96.6 per cent. were healthy.

Trow, of Toronto, reported that of 41 pregnancies before treatment in 22 syphilitic women, 8 were miscarriages, 6 stillbirths, 7 living syphilitic children, 12 living non-syphilitic children, 9 died from syphilis and 2 died from other causes. These figures show bad results in 68 per cent. of the pregnancies. Out of 32 pregnancies occurring among the same 22 women after treatment was given there were no miscarriages, 3 living syphilitic children, 28 living non-syphilitic children and 1 dead who had had syphilis. This series showed bad results in only 12.5 per cent. of the pregnancies.

These data are typical of reports made by numerous investigators and clinicians and show that treatment of syphilitic prospective mothers

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will prevent the infection in fully 90 per cent. of the offspring.

Royer says:

"It is now generally believed that those responsible for the prenatal care should routinely test the blood of the expectant mother, unless complete family records rule out the possibility of tainted blood, and that all expectant mothers found to have positive Wassermanns should be adequately and efficiently treated not only to avert syphilis of the general tissues of the unborn but to prevent syphilitic attack on the eye tissues and possible loss of vision or blindness later."

Another way to measure the size of the syphilis problem is to examine the morbidity statistics of the U. S. Nobody is so credulous as to believe that anything like all cases of syphilis which comes to the attention of physicians are reported. It is generally conceded, moreover, that the cases of other communicable infections are more completely registered. Even under these circumstances there were 1,226,643 more cases of syphilis than of typhoid fever reported in the U. S. during the 8 years ended with 1929. During the same period there were 1,193,662 more cases of syphilis than smallpox; 721,033 more syphilis than tuberculosis; 598,026 more than diphtheria; 43,956 more than scarlet fever and 189,750 more cases of syphilis than of whooping cough reported. There were more cases of syphilis reported than smallpox, tuberculosis and typhoid fever combined. In Illinois, where more than 12,000 fresh cases of syphilis are reported annually, the relative volume of notification is much the same as that in the country at large.

A little more accurate information has come from maternity hospitals where Wassermann tests have been made on all admissions over a period of years. In the Chicago Lying-in-Hospital, for example, Stillians began to make Wassermann tests in 1917. During the next 10 years he found 6 per cent. of the 6,954 admissions, mostly white, syphilitic. In 14 similar studies involving 58,000 unselected patients in 30 different clinics the rate of syphilis varied from 3 to 23 per cent., the rate falling below 7 per cent. in only 4 studies.

Again, the mortality statistics shed some light upon the question. In 1929, no less than 1,075

deaths in Illinois were ascribed directly to syphilis, locomotor ataxia and general paralysis of the insane. Heart disease killed 16,574 in the same year and conservative estimates charge syphilis with 10 per cent. of the fatalities ascribed to heart disease. Assembling the mortality data it seems that syphilis may be justifiably charged with 3,732 deaths in Illinois in 1929. This figure includes an estimate of 1,000 stillbirths and deaths due to premature birth, 1,075 charged directly against syphilis or its sequelae and 1,657 reported as heart disease.

Furthermore, Greer has called attention to the fact that the Wassermann test was positive almost twice as frequently in 982 tuberculous patients as in 962 non-tuberculous patients examined in his clinic. This finding leaves the suggestion that syphilis may sometimes be a factor in bringing on tuberculosis.

Jacuemart and Pfeiffer have written a monograph in which they conclude from their personal experience that carcinoma never occurs without being connected with syphilis while Verrotti, an Italian investigator, reports the recovery of two cases, one of ulcer of the stomach and one of ulcer of the duodenum, under specific anti-luetic treatment without surgical operation. Other authors hold that carcinoma develops on scars caused by syphilis and point to the frequency of positive Wassermanns in carcinoma patients. They also point to the frequency of carcinoma in subjects with congenital syphilis.

If syphilis is a factor in the production of either tuberculosis or cancer, or both, the usual evidence cited to show the magnitude of the problem of syphilis falls far short of the mark.

The statistics presented give a fair idea of the prevalence of syphilis and of the problem involved. At first glance the job of drying up the springs of the disease may seem too gigantic to offer hope of success. There are precedents, however, which show that great improvement can be expected to follow vigorously applied practical measures.

In the U. S. Army the annual admission rate from venereal diseases varied between 168 and 180 per 1,000 men per year before efforts at control were begun. After the enactment of a law in 1912, penalizing those who contracted these diseases, the admission rate fell to about 100. With the recruiting of many troops dur-

ing the World War came vigorous efforts at venereal disease control through education in sex hygiene and in providing prophylactic facilities. Another definite decline in the admission rate took place so that for the last 5 years it has been below 50 per 1,000 military personnel per year. This represents a reduction of over 70 per cent. within 20 years.

In Great Britain and in Europe, except France, the decline in syphilis has been so noticeable that Stokes declares:

"So marked is the drop that one may almost foresee the extinction of the disease, given sufficiently continuous application of present methods."

In England, it is the opinion of Colonel Harrison of the Ministry of Health, that syphilis has decreased five-sixths in that country since 1918. A survey in Germany indicates that the decline has been two-thirds in primary and secondary syphilis and one-third in congenital syphilis.

The plan of attack in Europe is simple. It is based upon the assumption that syphilis can be stamped out by treating infected persons. To that end treatment has been made cheap, or free, safe, accessible, attractive and comfortable and a policy of education has been substituted for notification and quarantine.

In any plan of attack the greatest emphasis must be placed upon early diagnosis and early, intensive treatment if the most satisfactory results are to be gained. Some authorities are now recommending that individuals who have been exposed to the possibility of a syphilitic infection should be given a dose of arsphenamine as a mere safety precaution during the incubation period and soon after the exposure.

Sachs, in view of the fact that malaria treatment promises to be so effective in general paresis, suggests the advisability of treating with malaria in addition to the other most approved anti-syphilitic therapeutics, every patient who has had constitutional syphilis and who shows signs of mental disturbance.

The opinion of experienced men is unanimous on the point that curability of syphilis is greatly favored by vigorous treatment during the primary stage.

Chargin and Stone, of New York, studied 444 cases. They found that a probable cure was

effected in 90 per cent. of the 36 cases who came under treatment in the chancre stage. Only 61 per cent. of probable cures were obtained in the 322 cases who first had treatment in the early secondary stage, while the probable cures in the 86 cases that first came under treatment with late secondary lesions fell to 45 per cent.

Warthin declares that he has never seen a case of "cured" syphilis, even after modern treatment, in which he could not find evidence of the survival of the process and even the organism itself at autopsy. His belief is that treatment simply reduces the disease to premature latency and that the subject maintains that latency at the price of his tissue reserve.

Stokes points out, however, that a single injection of arsphenamine will, in an overwhelming majority of cases, render the patient non-infectious within 24 hours and that repeated applications will hold the disease at a non-infectious latency for years, if not for life. From a public health and a public welfare point of view, this fact is ample justification for a most vigorous program based upon the treatment of infected individuals.

The foregoing makes clear the existence and character of the problem. It offers a proven method for solving the problem. A practicable means of applying the remedy in a satisfactory way is the only remaining essential factor which requires consideration.

Surveys conducted in representative territory all over the U. S. indicates that syphilis is rather evenly distributed everywhere in this country. Close to 5 per cent. of the population are affected. This indicates that the general practitioner who fails to find at least one case of syphilis out of every 50 patients handled is allowing this disease to escape his notice.

It is estimated on reliable grounds that 25 per cent. of the physicians in the country at large are treating 90 per cent. of the venereal disease patients. A very careful study showed that in St. Louis 10 per cent. of the physicians were treating 60 per cent. of the patients. This trend toward spontaneous specialism is an indictment against the general practitioner. A demand for specialists arises only when confidence is lost in the general practitioner. When confidence is lost there is usually a reason and that reason in

this case is either failure to recognize cases or too little knowledge about treatment.

Pointing out that the venereal disease program has become highly socialized everywhere, except in France and America, Stokes declares that in this field the individual practitioner is now on trial as he is nowhere else in medicine and nowhere is his dominion harder pressed or more gravely threatened. A book on syphilis, he reminds us, does very well if 10,000 copies are sold in four years.

I believe that the most effective way of reaching the general practitioner in Illinois is through the county medical society. A program on syphilis at least once a year is not too often. From the State Department of Health and from the medical staffs of the State hospitals is available splendid talent exceptionally able to discuss syphilis from every standpoint. Occasionally specialists from the U. S. Public Health Service are available. Men, like Stokes, Hazen and Stillians, may be had at some expense when it is desirable to attract large audiences of medical men.

I wish to commend these suggestions to your very serious consideration.

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DISCUSSION

Dr. W. H. Smith, Benton: I would like to emphasize the three main points made by Dr. Hall. First, early diagnosis; why wait for the Wassermann or Kahn test? Why not make a dark field examination? Then, early and persistent treatment; it is not enough that a man or woman infected with syphilis have three or four shots of medicine. Persistence is what counts. One negative Wassermann or Kahn is not sufficient, it is much better to have three or four or five negative reports to be sure your patient is cured. And finally, preventive prophylaxis should be taught to our young people. That, I believe, is the most important thing of all.

Dr. W. D. Chapman, Silvis: I wish to commend the speaker upon the importance of the subject he has chosen. While he was reading it, I was struck with the mention of malaria treatment in paresis. It seems to me it would be very bad public health policy to spread malaria over Illinois any more than is necessary. Paresis is not contagious and malaria is. I

know of no more likely way of re-introducing malaria into Illinois than by using it in the treatment of paresis. It is very difficult to eradicate. In this connection I would like to refer to an article by Dr. Charles Read which appeared in the January issue of ILLINOIS MEDICAL JOURNAL, describing the use of sulphur and reporting on the results. Sulphur produces a fever. It would seem a much safer procedure than the use of malaria.

So far as free treatment is concerned, I am of the opinion that the American public is not the gainer if the general practitioner is eliminated. I was amazed at reading in a lay magazine of a Chicago institute that treats syphilis, the report of which stated that treatment is made available to the patient at a rate he could pay. They are treating patients for an average of \$168 a year, and it struck me that Chicago is filled with general practitioners, good and competent men, who would be delighted to have one hundred cases of syphilis under care at \$168 a year. There is certainly something wrong with the figures here. I think the medical societies are the proper places for discussions of this sort.

Dr. J. H. Bacon, Peoria: I have listened with interest to Dr. Hall's statements regarding the effectiveness of treatment. I have seen a woman with a twin pregnancy, who aborted one twin at two months. She had not had treatment previously, and is now going to term with the other twin, under treatment. It is rather unusual to have one twin destroyed and the other go on. This was evidently a case in which there were two placentas.

Dr. R. O. Stites, Industry: I wish to commend the public health measures advocated by Dr. Hall, and I believe his suggestions are excellent. If our county medical societies would discuss the common issues instead of the uncommon, that would be a good thought for all to take home.

Dr. W. H. Smith, Benton: May I have the floor again to correct the impression Dr. Chapman appears to have. He did not understand Dr. Hall's remarks, apparently. Dr. Hall made a statement that someone had advocated malaria treatment; I did not gather the impression that Dr. Hall advocates it, nor that he advocates free treatment. The medicine is furnished free to the doctors, and I do not know that any doctor would object to receiving it free as they do antitoxin.

Dr. Andy Hall, Springfield (closing): The statements I made concerning free treatment had reference to what was being done in England and Germany, where they furnish free treatment to a large number of people. The statement concerning malaria was this—that Sachs, in view of the fact that malaria treatment promises to be so effective in general paresis, suggests the advisability of treating with malaria in addition to the other most approved antisyphilitic therapeutics, every patient who has had constitutional syphilis and who shows signs of mental disturbance. That is being done with paretics and some very encouraging reports are sent in. It is presumed that you clean up the malaria infection before you

turn the patient loose. I do not think anyone would advocate giving malaria to every case of syphilis that comes to his office and let him go free to roam about the country.

I wish to emphasize to the secretaries of the county medical societies the importance of this subject and the importance of giving it a prominent place on their programs.

SYPHILIS OF THE NERVOUS SYSTEM*

ALEXANDER B. MAGNUS, M. D.,

Medical Director, Chicago Sanitarium

CHICAGO

There is probably no subject in the annals of medicine which has enjoyed such widespread attention by investigators as that of syphilis. The time allotted for presentation scarcely will suffice for even a glimpse at the one phase of it—neuro-syphilis.

It is now well established that syphilis is an infectious disease, caused by the spirocheta pallida, and that the nervous system is merely one of the goals of that bacterial invasion. Of all infectious diseases of the cerebro-spinal axis, syphilis is the most important. It affects the nerves, the meninges, the parenchyma of the brain and cord, and the blood vessels supplying these parts. The changes are either inflammatory, degenerating, or both. Tissues of mesodermal origin undergo inflammatory changes, while those of ectodermal origin undergo degenerative changes.

Embryologically the meninges are derived from the mesoderm and histophysiologically differ in no wise from mesodermal tissue elsewhere in the body. Tissues of such fabric have, if invaded by microorganisms or their metabolic end-products or by any other foreign element capable of irritating these, a more or less well-defined response, clinically designated as a reaction to inflammation. Thus an influx of lymphocytes, or phagocytosis, seems to be the main factor in the resistance shown, and success or failure will depend naturally upon the potentiality of the rising tide in defense of the host invaded.

As for the brain substance proper, the difference is striking indeed; embryologically it is of ectodermal origin; histologically it presents a multitude of neurones held together by glial

tissue. Pathogenic insult here results in a true degeneration of the neuron elements with probably very little power of resistance. The only possible reaction to any process of degeneration of nerve elements (leaving the myelin out of consideration) is possessed by the glial tissue. The reaction of the glia to myelin degeneration is especially prominent by the formation of large or small ameboid forms.¹ Unfortunately the power of the glial tissue is very limited and inadequate as a factor of defense, with the result that it itself undergoes extensive proliferation. Thus the invader's aggressiveness unhindered goes on probably because of the absence of the type of reaction so inimical to systemic welfare. These changes are usually manifested several years after acquiring the disease, but they are observed even in the first year after infection.

The signs and symptoms will naturally depend upon the extent and type of tissue involved, and also the time of their manifestations. When the invasion is diffuse it is sometimes difficult to circumscribe a clearcut clinical entity. But there are those cases wherein a fairly limited region has been so predominantly affected as to characterize the clinical picture. Moore,² of Baltimore, reports a group of cases both early and late in the course of syphilitic infection, where asymptomatic neuro-syphilis is of common occurrence. The findings were reported on the basis of changes in the spinal fluid in patients with primary and secondary syphilis.

Mental symptoms are not infrequent in cerebro-spinal syphilis, which, according to Henschen,³ are said to occur in 18 per cent. of syphilitic patients. Syphilis, furthermore, predisposes to arteriosclerosis and in a more indirect and entirely psychological way, the knowledge of syphilitic infection may result in a psychosis. It may also act before birth or at an early age in the offspring as a result of syphilis inherited from the parent, and result in a progressive intellectual deterioration, very much like the course described later in an acquired adult parietic. Occasionally one elicits a sudden mental explosion immediately following the first intravenous arsenical introduction.

The cases that come to our attention are nearly all pretty well along in their development and as a rule offer no difficulty of recognition. The past history is looked into and

*Read before the Chicago Medical Society (South Side Branch), May 8th, 1931, at the Chicago Sanitarium.

syphilis is never lost sight of; the patients are studied clinically and serologically. Two main types are recognized; 1, paresis, tabes or tabo-paresis; 2, meningo-vascular syphilis. A third type, cerebral lues, is often alluded to by certain investigators whenever any of the cranial nerves are involved only.

General paralysis of the insane or paresis is by far the most frequent of the syphilitic psychoses. The symptoms may be divided into: 1, the prodromal stage; 2, the stage of full development; and, 3, the terminal stage.

The Prodromal Stage. Diagnosis is not always easy, but very essential when so many unfortunate and embarrassing acts could be avoided by prompt commitment to an institution. The early signs are usually so indefinite, and of such slight degree that no particular significance is attached to them. An adult or middle-aged person, who has not previously been neurotic, will appear with probably only a neurasthenic complaint, such as easy fatigability, rheumatic pains, dizziness, insomnia, etc., or he may be possessed of a morbid fear of impending danger and show irritability or bad temper, lack of power of concentration, and he may become moody. Some are even able to realize that they are not quite so clearheaded and so competent as they used to be; they know that they are forgetful and that they make mistakes in the simplest tasks. Soon, however, more significant symptoms appear, such as evidence of defective intelligence. A previously sober and moral individual will indulge excessively in drinking and associate with lewd women, oftentimes openly without shame. The anti-social or immoral individual, on the other hand, may turn out to be an ardent reformer. The personality change is very characteristic. The picture in short is one of organic dementia. Upon it may be engrafted various coloring of either maniacal excitement or depression, delusions of grandeur and delirium. These subservient attributes in themselves are of no diagnostic value. The transitory and shifting character of all symptoms and signs should always lead one to suspect lues.

The physical signs usually present consist of oculo-motor and light reflex disturbances. The pupils may be irregular, unequal, either sluggish or fail to react to light, directly or consensually. The pupils may not dilate on stimu-

lating the skin of the neck or by mental exertion. The knee jerks are over-active, while in tabo-paresis they are diminished or abolished. The tongue protrudes hesitatingly and shows a tremor. There is beginning slurring of speech and the hand-writing is analogous to the slurring. In doubtful cases the Muck Adrenalin or Mucographic test is made use of. The inferior turbinate is rendered ischemic by the application of a 1:1000 adrenalin solution. A linear scratch is then made parallel to the floor of the nose with a probe under moderate pressure. In cases of neuro-syphilis the lines appear hyperemic on an ischemic background and stand out quite white when the turbinates become hyperemic again.

In the state of full development the mental and physical symptoms and signs are merely more exaggerated expressions of those described in the prodromal stage. Memory fails utterly. Dementia is more pronounced. Excitement, depression or grandiose symptoms appear more prominent. Paretic seizures are conspicuous; they may be of the petit or grand mal type. The naso-labial folds seem wiped out. The voice lacks expression and words are stumbled over.

The Terminal Stage. Orientation is lost in all spheres. The patient leads a vegetative existence more than a mental life. The seizures are more frequent and there is loss of sphincter control. Death takes place during a seizure, from bed sores, or other complications. Serologically—The blood Wassermann is usually positive; occasionally it is negative. Negative blood Wassermann of treated or untreated cases does not rule out cerebro-spinal lues. The spinal fluid study is, therefore, of great importance. Syphilitics, as a rule, have no post-puncture headache. Sometimes the mere withdrawal of fluid will cause the symptoms to subside. The cells counted by the Fuchs-Rosenthal method immediately following the puncture usually will vary from 10 to 100 per cmm. The globulin test is positive; the Wassermann reaction is positive in nearly all cases, especially with larger dilutions. Another aid is the gold sol test. While a diagnosis of lues on the curve alone cannot be made, syphilis, if otherwise diagnosed, the various curves produced by the color changes serve to differentiate the type of syphilis

present. Three curves are recognized: paretic, meningeal and luetic.

Meningo-vascular syphilis differs from paresis in that the former term is used to designate involvement of the arteries of the nervous system together with the meninges, particularly the pia-arachnoid. The disease manifests itself early usually within the first and second year after infection. When the vessels are primarily involved paralytic symptoms from thrombosis or hemorrhage dominate the picture. Any of the cranial nerves may become involved, more commonly the optic, oculo-motor and abducens. A fixed rather than an Argyll-Robertson pupil is diagnostic. Choked discs are sometimes met with, as well as general symptoms of gummatous meningitis. Neuralgia, hyperesthesia, anesthesia accompany trigeminal nerve involvement. Headache, acute exacerbations, rigidity of neck and pains along the roots testify to the presence of meningitis. The meningitis is usually basilar in type. Polyuria and glycosuria are not infrequent. Mentally there may be irritability, restlessness and anxiety, or a state of lethargy. Serologically, the Wassermann reaction is more commonly positive in the blood than in the fluid. The cell count may run into hundreds and even higher when the involvement is more meningitic and the gold sol curve is in the meningeal zone.

Spinal Cord Syphilis. Convincing proof to explain the seemingly selective regional distribution of syphilitic pathology in the brain in different individuals is still lacking. Some ascribe it to a peculiar predilection or affinity of the spirocheta or perhaps certain strains of the same; while others maintain that there is an innate susceptibility or possibly a lowered resistance of certain of the brain tissues, that succumb to the scourge of the bacterial onslaught. Be that as it may, the same principle is equally applicable to the cord. Almost any column or combination of tracts may be involved, precipitating any of the known spinal diseases. Locomotor ataxia only will be mentioned. The process begins with the dorsal roots ganglia, causing sharp shooting pains which are often mistaken for rheumatism. It next ascends to the posterior columns of Gall and Burdach reaching up ultimately to the higher cerebral territory where it shows a special predilection for the 2nd, 3rd, 4th and 6th cranial nerves. Sensory symptoms

predominate. Girdling sensations are felt encircling the chest or abdomen. The patient feels as if he were walking on carpet. The knees and ankle reflexes are diminished or abolished. The Romberg sign is positive. Superficial and deep sensations are lost. The gait is ataxic. Charcot's joint is relatively more common in the female than in the male. Mentally the tabetic shows fair orientation and memory remains intact, save for those who progress to paresis. Krapelin describes a distinct psychosis in tabes, manifested by acute hallucinatory excitement. The disease does not kill. The spinal fluid shows slight increase in the cells and the globulin is faintly positive. The Wassermann reaction is mostly always positive.

The treatment of neuro-syphilis is in no degree less in wealth of approach at solution than that enjoyed by syphilis itself. Notwithstanding the timidity of many neuro-psychiatrists, probably so sensitized because of past repeated failures, who prefer the word "remission" for cure, my experience and observations tempt me to a prodromal feeling of saying "cure" for remission. This may be accomplished by subjecting the patient to a course of twelve body temperature rises on alternating days, followed by eight intravenous tryparsamide injections of 3 grams each at weekly intervals. Mercury salicylate, grain 1, is used three days before the tryparsamide injection intramuscularly. The malarial inoculation used for body temperature elevations, preferred by many, was described by Wagner Jauregg in 1918.⁴ There have been a number of fever producing agents described since and some mentioned even before. The methods tried at the Sanitarium were: Intra-spinal therapy,⁵ typhoid-paratyphoid, malaria, sulphur in oil, and the electric blanket application used now by Dr. S. D. Wilgus at the Elgin State Hospital. Each form has merits and disadvantages. Time limit does not permit of a comparative review of the different methods used. For a detailed description of the malarial method I would refer you to an article by Dr. Bassoe in the ILLINOIS MEDICAL JOURNAL for August, 1926.

The blanket method briefly consists of wrapping the patient in a well-padded and waterproofed electric blanket covered freely by more blankets to retain the heat. A current of $2\frac{1}{2}$

to 5 amperes is then turned on and allowed to pass until the mouth temperature registers 102-8 degrees Fahrenheit and then turned off. The body temperature continues rising until it reaches 106 and even higher and is made to decline at will by unwrapping the patient. Water is given freely and after the fever subsides, the patient sinks into a deep sleep. Extreme care must be exercised in order to prevent burns which are seldom more than of a second degree type and generally appear at the heels. Liberal wrapping of the feet in blankets will prevent such burns.

Results: Clinically gratifying results are usually observed, and if there is no previous longstanding deterioration, improvement of the mental faculties will follow early, though sometimes they become apparent months after the termination of the treatment. The serology, too, may show late changes. In some cases the fluid is seen to clear a year after the initial course of treatment. The fever and tryparsamide combinations are often repeated two or three times. Cases that will clear mentally during the fever course may develop acute visual and auditory hallucinations with the beginning of the tryparsamide succession. These symptoms are of transient nature and should not deter the clinician from the outlined course of therapeutic procedure. Dimness of vision, and even blindness, are sometimes met with in cases of pre-existing optic atrophy following the use of tryparsamide, but in many there is an evident escape from the blindness. In the well-defined second and terminal stages the results are not so encouraging. However, no matter how hopeless a case may seem, some improvement will invariably follow. Whether such improvement in far advanced or terminal cases will have any material bearing upon the ultimate fate or not, is not yet certain. In the meantime, however, a palpable economic advantage as well as a wholesome satisfaction to everybody concerned in and out of the institution is striking. Among the reported non-yielding cases to any form of therapy are doubtless many of the dementia praecox group, who, during their useful life were certainly no less liable to infection than the non-potentially psychotic individual. As yet the bulk of the dementia praecox cases respond to no form of treatment.

There are countless numbers of cells and processes that go to make up the brain substances, and success or failure will depend largely upon the number of cells destroyed. A brain cell once destroyed is never replaced. The fever treatment will at best go to arrest the process of degeneration, and if a sufficient number of intact neurons is left, the individual may continue thriving as efficiently as before, and in some instances even better; moreover, it would seem that many of our fellowmen function on so few neurones anyway. In frontal lobe tumors, for instance, large areas are often excised *en masse* without any consequent psychic alterations. A kidney removed, the one left will function and compensate for the one lost, etc. If the patient's ability to adjust himself to the environment is once restored and maintained reasonably long enough, along with negative laboratory findings, cure is certain and its pronouncement justifiable.

In closing I wish to say that no arsenical preparations other than the one mentioned above is used in our cases. There is ample clinical and laboratory evidence to show that most heavy metals do not reach the brain at all, and again Gennerich's⁶ version is timely when he says, "The more generalized the infection with the organism, the greater the production of immune bodies and hence the greater the probability of resisting the infection. When most but not all organisms are killed by arsphenamine and the natural immunity thereby reduced, there is danger of greater growth of the organisms unhindered by specific anti-bodies." Wechsler⁷ and others maintain that it is just those who have been vigorously treated that are most apt to develop paresis or tabo-paresis. The arsenicals, in moderate doses are, of course, of undisputed value in vascular syphilis and likewise in meningo-vascular syphilis, where almost any form of anti-luetic treatment will yield gratifying results. I believe potential neuro-syphilitic cases should be treated during their primary and secondary stages in the same manner as a case going into progression.

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DISCUSSION

Dr. Loren W. Avery: I think the last ten years has probably developed more knowledge concerning paresis than any other form of syphilis. I am glad that Dr. Magnus pointed out that there are mental changes in other forms of syphilis besides paresis. There seems to be a tendency at times to diagnose paresis in practically every case of lues with beginning mental change. Mental changes certainly occur in vascular conditions and may occur in that particular blood vessel syphilis, endarteritis, in which the patient has epileptiform attacks.

Mental changes may be of more than one type. Clinically, it may seem that the diagnosis of early paresis is difficult. It may be that it is more a pathological entity than a clinical one. Some cases treated apparently showed all the signs of paresis and they got well, but they may not have been paresis but spinal or meningeal syphilis. The mental changes of cerebrospinal syphilis are due to scattered foci of infection. Apparently, the brain can stand more if it is spotty instead of generalized.

It is rather striking that the histopathology of paresis really does not look much like syphilis in itself. Changes in the paretic patient are more sclerotic. Just what paresis is and how it comes about is still a very open question. The theory that paresis develops as a non-specific or non-luetic reaction to the spirochete is interesting.

The treatment of paresis seems to be advancing rapidly. The fever therapy certainly has its place in the treatment of this condition. There is no conformity of opinion as to what fever therapy does. Some German authors have described a reversion where it appeared to them that the attack would revert to the meningeal vascular type of pathology, but some American investigators have not been able to accept that particular reversal of pathology. Tryparsamide has a definite place in the treatment of paresis. It may be that tryparsamide in some cases will not be as effective as the fever therapy. It is true that the fever therapy seems to be of great value.

As to the treatment of other types of syphilis than neuro-syphilis, it is interesting that salvarsan seems to enjoy no popularity in the treatment of paresis and it does seem clinically that those cases that have received considerable salvarsan offer a bad prognosis. That may not be due to salvarsan entirely, of course. In those cases of syphilis that will go on to paresis in spite of all treatment, salvarsan is not of much value and nothing can touch them.

I should like to make a plea for the milder forms of treatment of syphilis. If we have learned anything in the last ten years, it is the importance of giving these patients long periods of rest, and to treat them only to the point where they feel bodily well. It is

entirely possible to over-treat them and cause them to feel less well.

CORONARY THROMBOSIS*

WALTER S. PRIEST, M. D.

CHICAGO

The recognition of coronary thrombosis as a clinical entity and its differential diagnosis from angina pectoris and other conditions has resulted in a great measure from the observations of American clinicians during the past fifteen years. Prior to 1910 occlusion of the coronary arteries was observed at the autopsy table but only occasionally was the possibility of the ante-mortem recognition of the condition mentioned. To a member of this Society, Dr. James B. Herrick, belongs the credit for arousing the interest of the American medical profession in this not uncommon accident of middle and later life. Since his first paper in 1912¹ and the subsequent ones^{2 3 4} a few years later a considerable literature has accumulated on the subject with the result that the symptoms and signs have become definitely established. In the majority of instances its recognition is not difficult if the possibility will only be borne in mind. Considerable has also been learned about complications and prognosis and certain lines of treatment established. But many more years of observation of acute cases and careful follow up of those that recover will be necessary before all of the possible data concerning these latter points can be accumulated.

In the course of an investigation of one phase of the subject during the past 4 years it has been my opportunity to study the case records of approximately 70 patients with undoubted coronary occlusion. Sixty of these form the basis of this paper. Some of these patients were personally observed, others were private and ward patients of the attending Staffs of Michael Reese and Chicago Memorial Hospitals. For the co-operation of these colleagues I am greatly indebted. A consideration of the data furnished by this fairly large group of patients may serve to emphasize certain points in the clinical pic-

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ture. The typical course of the acute attack and the immediate result is illustrated by the following case reports selected from this series.

Case 1. Male, aged 50 yrs. Hypertension 15 years, anginal attacks 5 years. Family history of angina. Awakened at three o'clock in the morning by sense of intense pressure beneath the sternum radiating to both arms but more so to the left. Pulse 130. B. P. 136-126. Pale cyanosis, cold sweat. More comfortable sitting up. Temp. 100°. Not relieved by amyl nitrite, and only partially relieved by repeated injections of morphine. Brought to the hospital about 7 A. M. at which time W. B. C. was 13,800. During the day he continued to have more or less pain which was difficult to relieve. At 7 P. M. paroxysms of coughing developed associated with dyspnea. About this time a precordial friction rub was heard. At 7:35 he was dazed and dizzy, pulse weak, 140. At 8 P. M. the pulse suddenly dropped to 88, at 8:30 he died.

Case 2. Male, aged 60 years, suddenly seized with severe substernal pain at 9 A. M. which was continuous until 6 P. M. at which time morphine sulphate gr. $\frac{1}{2}$ was given. Temperature at that time was 100.3°, B. P. 144/84 (it had been known to be much higher for sometime) W. B. C. 13,100. Admitted to the hospital the same day. Twelve days after the attack a precordial friction rub was heard. He did very well and was thought to be making a satisfactory recovery when on the sixteenth day he experienced sudden severe substernal pain, became pale, clammy, pulseless, vomited and was dead thirty minutes later. Autopsy showed a thrombosis of the intermediate branch of the left circumflex artery, an infarct of the posterior surface of the left ventricle, marked sclerosis with narrowing of the right coronary and a recent right pulmonary infarct.

Case 3. Male, aged 54 years. Previous history of hypertension. Family history of angina. Sense of tightness in the chest 18 hours gradually increasing in severity. Relieved only by morphine. Associated with fall in B. P. to 120/80, temperature 100.4° and pulse 120. Admitted to hospital forty-two hours after onset at which time temperature was 100.8°. W. B. C. 16,100. His course was complicated by pulmonary infarction of the right base. Friction rub was heard 17 days after onset. Remained in bed four weeks, then underwent a slow, careful convalescence at home. Alive today a year and nine months later. Active, i. e. able to carry on his work as an architect, and is free from any anginal symptoms. B. P. has ranged from 80/55 at time of discharge to 120/80.

Tabulating the outstanding points of the above cases we have a middle age patient, a previous history of angina or hypertension, sudden onset of substernal distress of varying intensity lasting several hours, not relieved by nitrites, relieved only by large doses of morphine, pale cyanosis, cold sweat, weak rapid pulse, a falling blood pressure, slight fever, moderate leucocytosis,

prostration of varying degree, precordial friction rub.

While a family history of angina and a previous history of hypertension are common, many patients are observed without the familial history and a few without preexisting hypertension. The attack is just as apt to occur during rest or sleep as following exertion. The severity of the pain varies from that which is so intense as to cause the patient to thrash about the bed or pace the floor to that which is no more than a nagging discomfort which does not force him to seek medical attention until some hours after the onset. The duration of the pain, if unrelieved by opiates, also varies. While it usually persists until so relieved it may cease spontaneously after thirty minutes to an hour or so, or after being intense for this period subside to a dull aching discomfort. The important point is that it lasts longer than the few minutes characteristic of an attack of angina pectoris. While a precordial friction rub was heard at some time in each of these three instances this finding is by no means constant and while very helpful is not necessary to the diagnosis. It is apt to be evanescent when it does occur, being heard by one observer but absent when the patient is examined again a few hours later. Naturally it is only when the myocardial infarction is in that part of the heart beneath the anterior chest wall that a rub may develop and even then the infarct must extend to the pericardial surface. The other points mentioned are essential to the diagnosis of acute coronary thrombosis. If the temperature is taken by mouth, especially in the early part of the attack, a slight elevation may be missed. Therefore rectal temperatures should always be taken.

The fate of these three patients typifies the three general groups into which the subsequent course may be divided, namely: 1. that in which the heart is unable to withstand the insult and fails rapidly over a period of hours. Occasionally the failure is more gradual and extends over a period of days but it is always unmistakably downhill in spite of treatment. 2. That in which there is every indication of recovery but which terminates in sudden exitus usually about the second or third week. The cause of death is either rupture of the heart at the site of infarction, thrombosis of a branch of the opposite cor-

onary, or temporary occlusion of an already sclerosed and narrowed coronary on the opposite side. Dr. Otto Saphir, Pathologist of the Michael Reese Hospital is of the opinion that if one coronary, for example the left, has been occluded, subsequent occlusion of the opposite coronary (or the right in this case) results in instant or almost instant death. We have been able to demonstrate this experimentally on the dog in some work done four years ago. By a suitable method we were able to occlude either or both coronaries at will after the animal had recovered from the necessary surgical procedure. Occlusion of either vessel alone could be maintained indefinitely. But, if while occlusion of one vessel was in progress, the opposite one was occluded ventricular fibrillation occurred almost at once and the heart stopped within sixty to ninety seconds. This lends support to the belief held for some time that sudden cardiac death, in absence of rupture, is due to fibrillation of the ventricles. It also explains the sudden death of patients several months after recovery from thrombosis of a coronary vessel. We have seen a number of times at the post mortem table old thrombi with healed infarcts in one side of the heart and a fresh thrombus with acute infarction of the other side or a very marked narrowing which could easily suffer temporary occlusion from spasm. And we feel convinced that the above premises explains many of the sudden deaths in people who are going about their daily work. 3. The third group comprises those who recover and live for varying periods of time. One may subdivide this group into those who get along with little or no discomfort, and those whose activity is more or less restricted because of anginal attacks or chronic decompensation. The patients who have little or no discomfort will usually be found to have low blood pressures as compared with their previous hypertension. Of the 29 patients reported here as still living 18 have average blood pressures lower than before the attack. They are all active and report little or no distress. Three have low pressures but are in poor condition. Seven whose pressures are as high or higher than before the attack have angina of varying severity.

Differential Diagnosis. The typical case presents no great difficulty if the possibility will be borne in mind. Angina pectoris is ruled out by

the duration of the pain, failure of nitrite to relieve pain, the fall instead of rise in blood-pressure, fever, leucocytosis, weak rapid pulse, shock, collapse, irregularities of the pulse, pulmonary edema, pericarditis, gastric symptoms, and evidence of embolism elsewhere in the body. The error in diagnosis most disastrous to the patient lies in mistaking coronary thrombosis for an acute surgical lesion in the upper abdomen. The most astute clinicians have made this mistake in the past and have seen these patients operated on only to die on the table and have the pathologist find the lesion in the heart. That the mistake is an easy one to make can readily be appreciated when we consider the not uncommon epigastric distress, nausea and vomiting, the fever and leucocytosis, the occasional icteric tint and rigidity of the abdomen which accompany coronary thrombosis. As more attention is called to the possibility and as we become more insistent on a painstaking examination of the heart of every patient past middle life with upper abdominal symptoms and as we go more minutely into the histories of these patients the less will the mistake be made.

Other observers, particularly Levine,⁵ have called attention to frequency of diabetes in patients with coronary thrombosis, and to the not infrequent occurrence of transitory glycosuria. While this association was almost nil in our series the presence of shock, stupor, glycosuria and even depressed carbon dioxide combining power does not exclude the possibility of an acute coronary accident.

Occasionally pneumonia may be diagnosed because of the pain, cough, rales, dyspnea, fever and leucocytosis and friction rub. But in pneumonia the pain is lateral rather than substernal, the temperature and leucocytosis rise within a few hours to much higher levels and other characteristic signs develop.

Occasionally the symptoms attending coronary thrombosis may be so mild as to pass almost unnoticed. One patient in this series came to the Dispensary several months after what she thought was an attack of "flu," for which she had remained in bed a short time. She had had hypertension for several years. A careful review of her previous record and the details of the attack of "flu" together with the electrocardiogram left little room for doubt that instead of "flu"

she had really had coronary thrombosis.

Rarely there may be no pain associated with the attack, only sudden syncope and dyspnea. Here again, careful consideration of the past history and other features of the attack together with laboratory examinations will be necessary to establish the diagnosis.

Prognosis. Prognosis in any case must be guarded. One must be content with saying that the patient has an even chance of surviving the immediate attack. While in this series only 15% died within a few hours to 16 days, Levine reports 53% as having failed to survive the acute attack. There are 10 or 20% of those whose subsequent course is known who died after recovering from the initial attack. The average duration of life of these was 10 months, the longest five years. All but three dropped dead suddenly. Those who are known to be alive have survived from two months to a little over four years with an average of 1.7 years. The average age of those who died during the acute attack was 53.5 years, of those who survived the acute attack, but have since died 58; of those known to be alive 54.1. The average age of the entire group was 53.5. It would seem that the prognosis is slightly better the younger the patient. While the incidence in women was low, the mortality rate was high. Sixty per cent died and all but one of these during the initial attack.

Treatment. Absolute rest is the most important therapeutic measure at present available. The patient must be spared every effort. Free and easy bowel movement must be secured after the first 24-36 hours. Visitors and all forms of excitement must be excluded. For the relief of pain large doses of morphine are necessary. These patients apparently tolerate morphine well and it has become our practice to give a half grain hypodermically as the first dose and subsequent doses sufficient to secure continued relief and quiet. So long as the circulation is able to carry on at all stimulation is inadvisable even though shock be profound. During the first 24 hours if the blood pressure remains below 100, or the pulse remains practically imperceptible for any length of time caffeine sodium benzoate in large doses, adrenalin or intravenous strophanthin are used. After this stimulation is seldom necessary and is attended with considerable danger. With the exception of complete heart block associated with

syncope or ventricular tachycardia which persists, the irregularities in rhythm such as auricular fibrillation and flutter, extrasystoles paroxysmal auricular tachycardia which frequently develop do not need treatment. For the former hypodermic injections of adrenalin are usually sufficient, or barium chloride may be used if the attacks are frequent. For the latter quinidin sulphate is almost specific. Huge doses are sometimes necessary. Levine reports one instance in which 1.5 grams were given five times a day before the desired restoration of normal mechanism was obtained. This author also suggests some helpful criteria by which this irregularity may be recognized at the bedside. The rate suddenly becomes rapid (150-200) but remains essentially regular. Careful and prolonged auscultation will however elicit an occasional slight pause. The rate is uninfluenced by vagal pressure. The intensity of the first tone at the apex may vary and a "sudden clicking, reduplication or snapping sound may be heard with various cycles." With the exception noted above we believe digitalis is contraindicated unless congestive heart failure develops. This will rarely occur until after the second week when the danger of rupture of the infarct has practically ceased and digitalis may then be given with comparative safety. In spite of the fact that many patients have recovered with a week or two rest in bed the period should be from six to eight weeks in every case, and resumption of physical activity be very gradual.

Electrocardiograms. The electrocardiogram has been of great assistance in the study of coronary thrombosis, and where the necessary instrument is available frequent records will be found both helpful and interesting. However, it is not absolutely necessary. In the great majority of instances the diagnosis can and should be made from the history, physical findings and leukocyte count. In the atypical case or the ones having associated conditions which complicate the picture, the electrocardiogram may be the deciding factor. It may at times give a clue as to the nature of a previous illness, the true cause of which was overlooked.

From time to time various abnormalities in the electrocardiogram have been pointed out as indicative of coronary thrombosis. There are inversion of the T wave, especially when associated

with upward rounded "cove" or "humped shaped" shoulders; high take-off of T from the descending limb of R; the reverse of this or a slow return of the string from S to the isoelectric line; elevation or depression of the ST interval; deep Q wave, especially in lead III; low amplitude of deflection of the QRS complex in all leads, and a small sharp notch in the isoelectric line at the base of R. Any one or more of these abnormalities may be present in the electrocardiogram of a patient with recent or previous coronary thrombosis. On the other hand, none of them may be found where there has been unmistakable thrombosis. Furthermore, one or more similar changes may be found in records of patients without history of findings indicative of thrombosis.

Looking at the record shown in Fig. 1, we would be tempted to make a diagnosis of coronary thrombosis without knowing anything

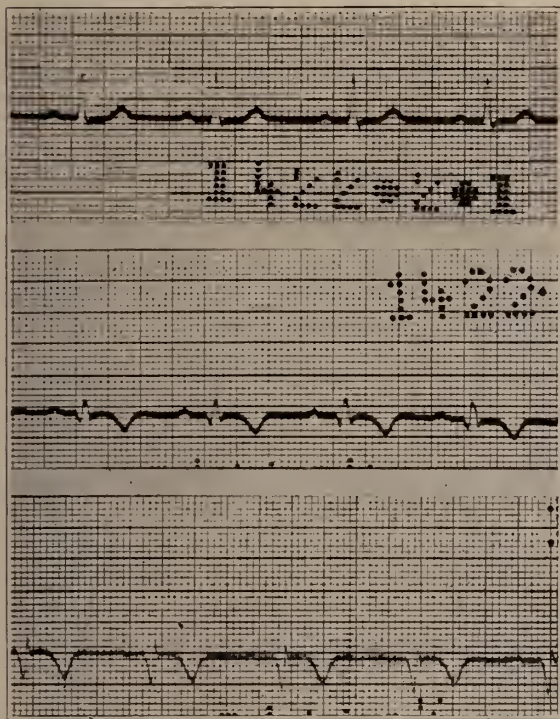


Fig. 1

about the patient. It has the inverted T in leads II and III, of typical form, deep Q and high take-off from R in lead III. In such a case, we would likely be correct as such a record is rarely, if ever, produced by anything else. Pericardial effusion is a possible exception. This record was made four weeks after thrombosis occurred.

Figure 2 is a record made eleven days after the third attack of thrombosis in nine weeks. It shows nothing which in itself is indicative of the

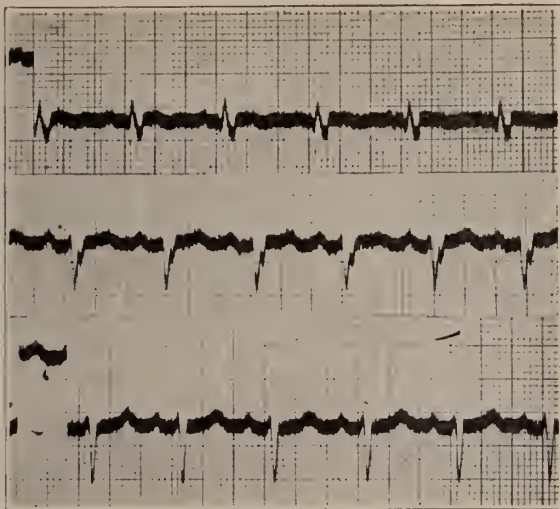


Fig. 2

condition. Figure 3-a is from a patient with coronary thrombosis showing low amplitude of QRS, depressed ST in lead I, inverted T with "cove" in leads II and III, deep Q and high take-off in lead III, and the sharp notch at the base of R in lead I. Figure 3-b is a record taken a few hours after thrombosis, showing the slow return to the isoelectric line and the notch at the base of R. Figure 3-c is from a dog after a few minutes occlusion of a coronary branch showing the slow return to the isoelectric line. The fourth strip is from lead III of another dog, showing deep Q and inverted T in lead III, a few minutes after occlusion. Figure 3-d is from a patient who did not have coronary thrombosis. Note the similar slow return to the isoelectric line.

Figure 3-e is the record made nine hours after onset of the acute attack, showing a modification of the slow return in leads I and II. This is commonly referred to as depression of the ST interval. Note also the deep Q and elevated ST in lead III.

Figure 3-f Record made four months after an attack diagnosed as "flu." Note the depressed and rounded ST and inverted T in leads I and II. This record together with the history of previous hypertension epigastric pain radiating to left shoulder, syncope, slight fever, drop in blood pressure, made the diagnosis of coro-

nary thrombosis rather than "flu" at least likely. Patient still alive.

Fig. 3-g. Record made thirty-six hours after onset of acute cholecystitis. Diagnosis confirmed at operation. Stones removed and drainage. Patient alive and well. Note the high take-off and deep Q in leads II and III and

aortitis and diabetes. Note the depressed ST in lead I, elevated ST in lead II, deep Q and high take-off in lead III. Patient alive.

Fig. 4-a, b, c. Records from patients with luetic aortitis, showing various abnormalities, including inverted T in various leads, depressed and elevated ST, small notch at base of R. Pa-

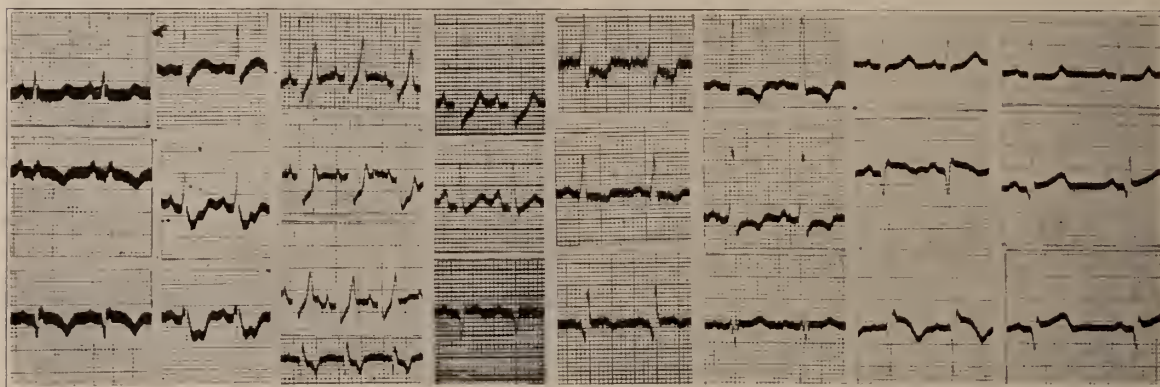


Fig. 3 a b c d e f g h

inverted T in lead III. It may be argued on the basis of the electrocardiogram that this patient really had acute coronary thrombosis. If so, it must have occurred simultaneously with the acute gall bladder attack, an unusual coincidence. Also it would be most unusual for such

tient b died suddenly. Autopsy showed aortitis and coronary sclerosis. No thrombosis or infarction.

Fig. 4-d, e, f. Records from patients with short anginal attacks without clinical history or findings of thrombosis showing various abnor-

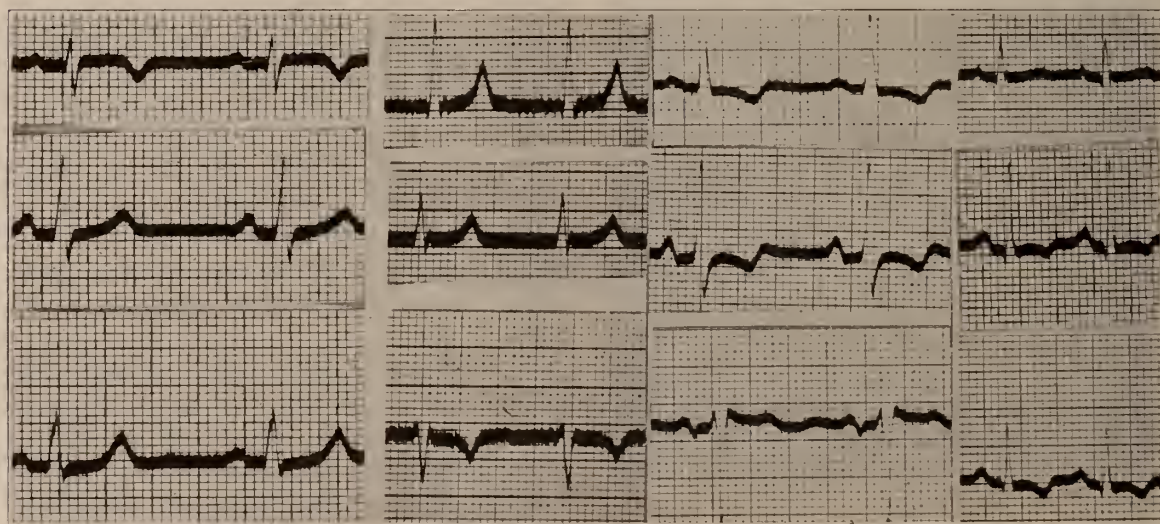


Fig. 4 a b c d

a patient to survive a major surgical operation under general anesthesia.

Fig. 3-h. Patient aged fifty-nine; no cardiac symptoms or complaints; no hypertension; routine electrocardiogram; arteriosclerosis with

malities including deep Q in lead I, depressed and elevated ST, inverted T. Patient f died of uremia. Autopsy showed coronary sclerosis but no thrombosis or infarction.

Fig. 4-g, h. Routine records of patients aged

forty-one and forty-nine without cardiac complaints. Both had hypertension. No history suggestive of previous coronary thrombosis. Abnormalities shown are deep Q in lead III, de-

come of the acute attack falls into three groups; death instantaneously or within a few hours; death within 14-16 days; recovery. Location and radiation of the pain has wide variations. Pain

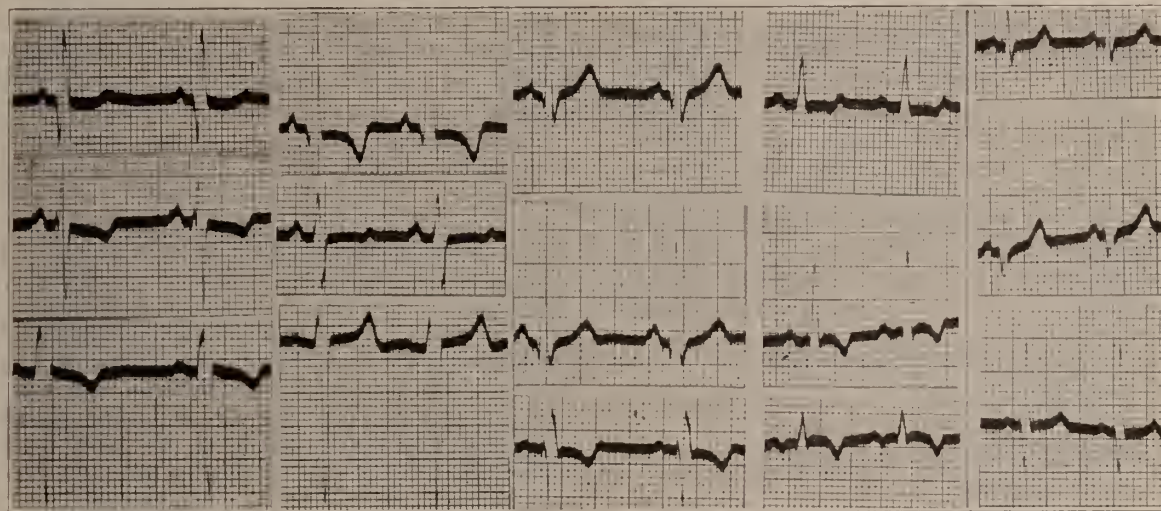


Fig. 4 e f g h i

pressed ST, fairly typical inverted T in leads II and III.

Fig. 4-i is included merely to illustrate the occurrence of deep Q in lead III in a child of four and a half years without heart disease.

Summarizing the above records, five illustrate the several variations observed following coronary thrombosis. The type of variation in a given record depends considerably on the time which has elapsed since the accident. One illustrates the possible absence of typical variations in spite of clear cut clinical evidence. Two (Fig. 3 g and 4 h) are records which one would be inclined to diagnose as indicating coronary thrombosis but in which the clinical evidence is lacking or doubtful. The others are included to show variations which while somewhat similar to, must not be confused with those of coronary thrombosis.

SUMMARY

Sixty records of patients with coronary thrombosis were analyzed. The youngest was 36, the oldest 80. Eighty-five per cent survived the acute attack; of these 10 lived an average of 10 months, the longest duration of life being five years. All died cardiac deaths, mostly sudden. The remainder so far as is known are still alive. The average age of those dying during the acute attack was 58, of those still alive 51. The out-

come of the acute attack falls into three groups; death instantaneously or within a few hours; death within 14-16 days; recovery. Location and radiation of the pain has wide variations. Pain

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Table 1—Age and sex incidence. Distribution as to decades. Subsequent fate. Ratio of males to females; comparative mortality as to decades and sex.

Table 2—Location and radiation of pain during the attack. Including only those patients from whom a sufficiently reliable history could be obtained. The prodromal weakness group includes patients who had undoubted attacks without pain.

Table 3—Associated conditions and complications arising during acute attack.

TABLE 1
Age

Average 55.5
Youngest 36 died first attack
Oldest 80 died first attack

Average age of those who died during first attack..... 58
Average age of those surviving first attack but since died 56.5

Average age of those alive	51.4
Average age of males	55.5
Average age of females	56.7

DECADES

	No.	%	Alive No.	%	Dead No.	%
35—40	3	5	2	7	1	5.2
41—50	13	21.66	5	17.2	3	15.8
51—60	29	50	16	55	9	47.3
61—70	10	16.66	3	10	5	26.3
71—80	5	8.5	3	10	1	5.2
	60		29		19	

Alive	29 or 50% of total or 60% of those known
Dead	19 or 31% of total or 40% of those known
Not heard from.....	12 or 20% of total
Males	48 or 80% of total
Females	12 or 20% of total
Males dead	13 or 36% of those known
Females dead	6 or 60% of those known

TABLE 2

Location and Radiation of Pain

- I. *Substernal* 23
 1. Without Radiation 6 (Localized under manubrium 1)
 2. To R. & L. arm 7
 3. To L. chest and arm 2
 4. To Back 2
 5. To Epigastrium 1
 6. To mid line of back to neck to R. and L. shoulder 1
 7. To throat 1
 8. To R. and L. arm and jaw 1
 9. To L. side of neck, shoulder, arm and scapula 1
- II. *Precordial* 9
 1. Without Radiation 2
 2. To L. shoulder and arm 4
 3. To entire chest 2
 4. To interscapular region 1
- III. *Epigastrium* 9
 1. Without Radiation 1
 2. To R. shoulder and arm 3
 3. To L. arm 3
 4. To R. and L. arm and around side of chest to back 1
 5. To R. U. Q. 1
- IV. *Miscellaneous* 10
 1. R. chest to R. shoulder and arm 3
 2. Both sides of chest ant. to R. and L. arm 1
 3. L. shoulder 1
 4. L. shoulder to upper chest 1
 5. L. elbow to shoulder 1
 6. R. U. Q. 1
 7. Jaw to chest 1
 8. Lower abdomen to back, up spine—L. little finger up arm to precordium.
- V. *Prodromal weakness* 6

TABLE 3

Associated Conditions

1. Diabetes—2.
2. Thyrotoxicosis—2.
3. Mitral insufficiency—2
4. Mitral stenosis—1
5. Preexisting auricular fibrillation—1.
6. Gall bladder disease—4.
7. Asthma—1.
8. Syphilis—1.
9. Enlarged heart (x-ray)—11.
10. Dilated Aorta—5.

Complications

1. Auricular fibrillation—5.
2. Auricular flutter—1.
3. Extrasystoles—21.
4. Partial heart block—10.
5. Complete heart block—1.
6. Friction rub—9.
7. Pulmonary infarcts—4.
8. Embolism of popliteal artery—1.

DISCUSSION

Dr. J. P. Simonds (Chicago): This very interesting paper, I think, should receive a great deal of notice and publicity, because it calls attention to a disease that is of very great importance. It is not only important because it is so frequent in patients who have reached middle age, but also because it is one of those diseases in which the results of treatment depend so much upon an accurate or correct diagnosis.

Several years ago I served as coroner's physician in Cook County. Whenever I was ordered to investigate the death of a middle-aged or elderly patient who was said to have died of ptomain poisoning or acute gastritis, I was reasonably sure to find that death was due to coronary thrombosis. This condition was not very well known at that time. Because its clinical manifestations, such as the character of the pain, the fever, the leukocytosis, and the other clinical manifestations that Dr. Priest mentioned, are better known today than they were even ten years ago, there is a better chance for patients who are the victims of this condition to survive, for the chances of survival in most cases are proportional to the correctness of the diagnosis.

As one studies these cases he is impressed more and more with the remarkable ability of the heart to adapt itself to the most amazing pathological changes if it is given an opportunity. Nature seems to take care of matters of this sort in an unusual way. The collateral circulation between the different branches of the coronary arteries is small and inadequate in children and young people. With advancing age, the collateral circulation becomes more abundant and the connecting vessels are larger in their caliber. This, of course, is a most favorable condition for patients who suffer from coronary thrombosis.

One great danger in coronary thrombosis is that necrosis of part of the heart wall will result in an immediate widening of the mitral ring, or the involvement of the papillary muscles, so that a very sudden insufficiency of the mitral valve is produced. Insufficiencies of the heart valves in the ordinary chronic type develop rather more slowly.

Another disaster that may come about is that the healthy portion of the heart muscle may tear itself loose by its contractions from the necrotic portion, and thus lead to a hemorrhage into the pericardial cavity, which, of course, is very rapidly fatal.

The chief hope for these patients is that if they are kept perfectly quiet, and the heart protected from the least possible strain, it will be able to carry on, handicapped as it is, until this necrotic portion can become organized and its place taken by fibrous tissue. As a rule, the parietal pericardium becomes firmly attached over this infarcted portion quickly and helps to guard against a fatal rupture. If the patient survives, the whole mass of necrotic heart muscle ultimately becomes replaced by fibrous tissue. Any pathologist who has had any very extensive experience has been surprised many times at the relatively huge amount of heart muscle that has been replaced by fibrous tissue, and yet that heart has been able to carry on and the patient

live comfortably for many years. The chief hope for a patient in the acute stage of coronary thrombosis is an early correct diagnosis and giving the heart a chance to adapt itself to the change.

I should like to ask Dr. Priest whether he has any data in regard to the time that the leukocytosis develops after the onset of the pain?

Dr. C. A. Earle (Desplaines, Ill.): I should like to ask the doctor whether he has had any experience with the vascular dilators—an example of one is theocalcin, or some such name—not particularly for the acute attack, but for the prevention of recurring attacks.

Dr. N. S. Davis, III (Chicago): I was very much interested in Dr. Priest's paper. I think there are one or two things I would like to emphasize. One is that while this is primarily a disease of the late fifties and sixties, you do see it not infrequently in people under thirty—more frequently than is commonly believed.

Also, I want to mention the importance of rest for a prolonged time in the treatment of these patients to give the infarcted area an opportunity to organize.

Another thing, is that we do not infrequently get coronary occlusions without pain, and they may be very extensive occlusions, as in a case that we had at a Pathological Conference recently. In this case there was a combination of hypertensive disease and old rheumatic disease, in which there was a coronary occlusion without pain, apparently two years or so before the patient's death. There was at that time a sudden onset of heart failure symptoms, especially respiratory-pulmonary congestion. At autopsy there was a very much thickened myocardium except around the apex, where it was practically completely replaced by fibrous tissue, and a beginning aneurysm of the heart.

Another thing is the way a patient can live with extensive involvement of two branches of the left coronary. We had a patient in whom the first occlusion was about a year before death. He had a second occlusion about a month and a half before death. Both of these became canalized. In one there was a calcium deposit so that at postmortem one could get the sound of the calcium in the thrombus. The cause of his death was an obstruction to one of these canalizations.

Another case, that had had an occlusion of one branch of the left coronary a month or two before admission to the hospital, came in with a fresh coronary occlusion and lived about thirty hours after the occlusion. That was a case in which the second occlusion was in the opposite branch. As I remember the first had been in the left and the second in the right branch. He lived for thirty hours after the occlusion. We have had several cases that have lived quite a while after lesions in both branches of the left have been formed and they have lived quite comfortably.

Dr. Charles R. Wiley (Chicago): The division of the sections into medicine and surgery, particularly in relation to this type of case—coronary thrombosis—is perhaps the wrong procedure, I think an important thought in connection with coronary thrombosis is the fact that throughout the country in general hospitals, due to the newness of the recognition of this malady,

many cases go to surgery and fatal termination, particularly gall-bladder surgery, that look definitely like coronary occlusion.

I think the message the Doctor gave this morning is one to be taken home by the surgeons, and it is a subject that should be thoroughly understood. Too often these cases are operated on due to the lack of a medical man in attendance on the case—that is, a medical man who is thinking about the probability of coronary occlusion.

The sudden coronary occlusion is less common than the gradual sclerosis.

Most of us who are doing this type of work have seen at least ten or fifteen cases of a gradual sclerosis of the vessels, either of the small branches or of the main vessel, followed later by this complete occlusion. It seems to me that these sclerotic cases are just as important to recognize early and to advance a method of treatment which will prolong their lives.

Every hospital and every doctor should make use of electrocardiography in relation to substernal pain. While it is not always positively conclusive, still it is a great benefit in assisting in the interpretation of these symptoms. The reading of the graph after a few weeks study is a simple procedure. The reading of the normal graph and the differentiation in direction, particularly of the "T" wave is relatively simple. Electrocardiography is a great aid in this new and very dramatic subject of coronary thrombosis.

Dr. Walter S. Priest (Closing): I want to thank all the discussants for their extremely pertinent points, especially as to pathology, a phase of the subject that I purposely did not take up because of time limitation.

As to the length of time it takes leukocytosis to develop, it is a matter of a few hours. We have demonstrated leukocytosis in patients two hours after the attack. As to how soon before that it develops, I have no available data. It lasts for a few days and coincides somewhat with the elevation of the temperature.

In regard to the use of the vaso-dilators. In this series of patients and referring to those who have recovered and whom we are attempting to carry on, not all of them have received vaso-dilators. I get the impression from going over their records and from personal experience that they do better with the use of the vaso-dilators, especially of the type you mentioned. I see no contraindications to their use, and I see no reason why they should not help.

Dr. Davis very properly called attention to the occurrence of sudden coronary thrombosis without pain. Nine of the patients in this series had attacks of syncope and dyspnea without pain, then later experienced the more typical attacks. I think that these prodromal attacks were caused by coronary occlusion, as least in most instances.

I do not want the members to get the idea that I decry the use of the electrocardiograph. My purpose was to emphasize that coronary thrombosis can be diagnosed without an electrocardiogram and, conversely, that to make a diagnosis from the electrocardiogram alone is risky. I use it on every patient with suspected

heart disease, and I am beginning to urge patients past middle life who come in for physical examination and check-up to have an electrocardiogram made as a basis for future comparison. It is one of the most helpful things in determining what has happened to a heart later on to have a previous electrocardiogram made when the patient had no heart symptoms. One of the greatest uses of the electrocardiogram in coronary thrombosis is in following the progress of the acute attack. During this period the records change very rapidly, often from hour to hour and from day to day. As long as these changes are going on, we feel that the repair process is going on. When the record becomes constant, we feel that in all likelihood organization has taken place and the infarct is safer from the standpoint of possible rupture than it was before.

SCARLET FEVER IMMUNITY AND STREPTOCOCCAL PUERPERAL INFECTION*

G. E. HUDSON, B. S., M. D.,
CHICAGO

Maternal care, antepartum, intrapartum and postpartum, has for its chief aim the prevention of disability, morbidity, and mortality. Nearly all first-class obstetric clinics have long since ceased to boast of their low maternal mortality as it is a factor common to them all. Where these same clinics differ widely, however, whatever standard may be used in comparing their work is in the degree of morbidity and disability, and it is in precisely these fields that much can be done to improve the results.

The factor with which we particularly wish to deal in this paper is infection. As everyone now appreciates, infection depends on the virulence of the organism, the avenue of infection and the patient's immunity to the invading organism. Any sin, therefore, of omission or commission which will result in trauma, in introducing a foreign organism to the external or internal genitalia, in deliberately opening an avenue of infection, or in lowering the patient's resistance, should meet the condemnation it so richly deserves.

There has been considerable disappointment professed by our profession concerning the results of antepartum care. The trouble is that as doctors many of us are not doing our whole duty. In the antepartum period we have concerned ourselves largely with the prevention and

treatment of major complications and have neglected supposedly minor ailments with all too frequently very unpleasant results in the intrapartum and postpartum periods. Thus antepartum care has consisted in looking for signs and symptoms of syphilis, ruptured uterus, placenta previa, abruptio placentae, chronic pulmonary and cardiac diseases, abnormal pelvis, and the toxemias of pregnancy. This is excellent so far as it goes, but what of the many patients who pass through our large clinics, who, among other things, are weak, anemic and undernourished, and go into labor in this condition without having had a thorough examination, a hemoglobin determination or even any instruction as to exercise, rest, and diet? Such patients cannot be expected to meet successfully even the less virulent invader.

Then, during labor, we are often grossly negligent of our very evident duty to conserve the patient's energy and thereby maintain her resistance to infection. Rest and nourishment are so easy to provide and so often neglected. The patient has weak, ineffective pains over a long period of time without any effort being made either to eliminate them or to boost them to the point where they can dilate the cervix. The result is that the patient's vitality is sapped and no work accomplished. Sometimes on the other hand she is permitted to suffer unnecessarily severe contractions without the administration of sedatives in any systematic manner. In either case she frequently is allowed to go through twenty-four, forty-eight or even seventy-two hours of labor with only the feeblest efforts on the part of her attendant to induce her to take nourishment. The result of this gross negligence is an increase in the incidence of operative procedures such as Dührssen's incisions, versions, forceps and cesarean sections with their bitter trail of morbidity, invalidism and even death.

Hemorrhage in the third stage of labor is likewise a common cause of lowered resistance and consequent infection. Apart from reducing to a minimum the amount of blood lost in a Schultze or physiological separation of the placenta, everyone should familiarize himself with the signs of a Duncan separation and the proper procedure to be adopted in such a case, for it is usually in Duncan separations that excessive

*From the Department of Obstetrics and Gynecology, University of Chicago.

*Read before the Chicago Medical Society, April 15, 1931.

amounts of blood are lost if appropriate measures are not taken.

Conditions which predispose to subinvolution and bleeding in the puerperium are often overlooked. Anything which impairs the contractile power of the muscle fibres necessitates the administration of ergot, prophylactically, during the first twenty-four hours postpartum and perhaps longer, as the best barrier against postpartum pelvic infection is adequate contraction and relaxation of the uterus. Some of the conditions which thus call for ergot are prolonged labor, polyhydramnios, twins, fibroids, chronic pelvic infection, operative delivery, Credé of the placenta, great multiparity and general ill health, while in the more remote puerperium the commonest cause of subinvolution and bleeding is probably third degree retroversion of the uterus. If, however, from any cause we find a hemoglobin of less than 45 per cent. at any time during convalescence, the patient should be immediately transfused, otherwise, even if she does not fall a prey to organisms lurking within or without, her convalescence will be unduly prolonged.

As to avenues of infection, more or less trauma to the passages will ensue, whatever the procedure employed in delivery, but whether we should routinely open up large avenues of infection in the form of deep episiotomies is the subject of considerable controversy. Personally we believe, that if there is no fetal indication for emptying the uterus and the patient can deliver spontaneously without a laceration of the perineum in the course of one and one-half to two hours in the second stage, provided the head has not been on the perineum for over half an hour, she should be permitted to do so, especially during the winter months when droplet infection is so common. If we follow this course, the majority of multiparae with a vertex presentation will not need an episiotomy, especially if a little anesthetic is given to relax the perineum while the head is being delivered. If, however, the patient will evidently lacerate herself, and this will apply to most primiparae, then a clean-cut incision is far preferable to a ragged laceration.

Antisepsis and asepsis should receive the strictest attention, and the former should never unnecessarily replace the latter. To this end

we believe that, unless it is absolutely necessary, nothing should enter the vagina from the beginning of the ninth month to the end of the second week postpartum. This applies alike to intercourse, to hands, packs, bags, douches, electric cauteries and forceps.

Even after we have given all the factors enumerated our most careful attention, a certain measure of infection is still present even in the best clinics; and the prevention of this infection constitutes a direct challenge to our energy, sincerity and powers of investigation.

Considerable work is being done on the nature and source of the organisms responsible for puerperal infection as well as on the possibility of actively or passively immunizing the patient against them.

It is the consensus of opinion among the more thoughtful and experienced of the profession that organisms present in the vagina before delivery seldom cause puerperal morbidity. This is supported by a certain amount of experimental work important among which is that recently published by Taylor and Wright.¹ These investigators listed the organisms present in the antepartum vagina as the staphylococcus albus, the staphylococcus aureus, diphtheroid bacilli, coliform bacilli, and the non-hemolytic, hemolytic, pseudohemolytic, and anaerobic streptococci; but their work shows that, although there is some slight risk arising from this endogenous source, it is the bacteria which enter the genital tract shortly before, during or shortly after labor that are practically always responsible for infection.

Of the organisms arising from an exogenous source the one least commonly found, but most frequently responsible for serious puerperal complications, is the streptococcus hemolyticus. Numerous efforts are being made to determine what particular strains of this organism are found; and especially if any of them are related to the strains causing scarlet fever, against which we have a more or less effective serum for active and passive immunization. It is our findings relative to this subject that we wish to report in this paper.

This work was done on the obstetric service of the Long Island College Hospital, Brooklyn, New York, and was suggested by a review of 8,000 cases by Adair and Tiber,² from which

they concluded, among other things, that "those who had a previous infection with the streptococcus as in scarlet fever are less liable to a morbid puerperium."

Probably the best experimental work on the production of immunity to streptococcal puerperal fever was done by Lash and Kaplan,³ who, with the toxin obtained from the puerperal streptococcus hemolyticus produced sufficient antitoxin to protect rabbits against the lethal dose of this same organism. This seemed to be a long step forward. The great difficulty is, however, that immunity to one strain of streptococcus or even to a number of strains, by no means implies immunity to all; and we have no reason to believe that pelvic puerperal fever like scarlet fever may not be caused by numerous strains of the streptococcus hemolyticus.

In our work two hundred and forty-eight cases were given the Dick test. Of these, forty-nine were positive, and one hundred and ninety-nine negative. Of the forty-nine positive cases, thirteen were immunized against the streptococcus scarletinae, and thirty-six were permitted to remain susceptible. Of the one hundred and ninety-nine negative cases, one hundred and thirty-five received no injections, while the remaining sixty-four were hyperimmunized. Both immunization and hyperimmunization were induced by making four subcutaneous injections of toxin at weekly intervals. The first injection consisted of 500 skin test doses, the second of 2,000, the third of 5,000, and the fourth of 10,000. Where a positive patient was being immunized a Dick test was made two weeks after the last injection. This proved to be negative in all except one case where an additional 20,000 skin test doses failed to produce immunity.

Patients subjected to this experiment were receiving routine prenatal care, and many of them were with difficulty induced to submit to the discomfort of the injections and the inconvenience of making extra visits. All patients investigated were delivered in the hospital, where they were very carefully watched throughout the entire intrapartum and postpartum periods.

Of the two hundred and forty-eight women who received the Dick test, one hundred and eighty-eight delivered during the period of investigation. Of these, twenty-nine were susceptible, thirteen had been immunized, one hun-

dred were originally negative, and thirty had been hyperimmunized.

In the one hundred and eighty-eight deliveries there were no deaths due to infection, and only eight cases developed an infection of positively pelvic origin. As two of the eight infected cases did not show their first elevation of temperature until after the fifth day, no intrauterine culture was taken, as it has been repeatedly shown in such cases that many organisms are present in the uterus; and it would have been impossible to tell which, if any, of them were responsible for the rise. The remaining six infected cases had their elevation within the first four days; and intrauterine culture taken a few hours after the rise in temperature yielded a pure culture of streptococcus viridans in one case and of streptococcus hemolyticus in the remaining five.

The intrauterine cultures were taken with the Döderlein-Little tube according to the technic described by Williams.⁴ That this technic was effective is proved by the fact that the organisms were isolated in pure culture.

Bacteriological tests showed that none of the hemolytic streptococci isolated from the uterus belonged to the larger groups of the strains of streptococci causing scarlet fever; but of course, there may be isolated from scarlet fever patients a considerable number of strains which cannot be placed in these larger groups.

None of the eight infected patients gave a history of scarlet fever, but little importance is attached to this fact, as, on being questioned closely, most of them were uncertain as to whether they had had the disease in early childhood or not.

The essential point in this investigation is that of the eight cases developing a genital puerperal infection all were Dick negative, and one had been hyperimmunized; and, although the series is a small one, the results prove conclusively that immunity to scarlet fever as determined by the Dick test does not necessarily protect the puerpera against genital infection of streptococcal origin.

This represents one of the many attempts that have been made in recent years to protect the prospective mother against one of the most dreaded complications of pregnancy. So far practically all such efforts have ended in failure.

Streptococcal puerperal fever is ever with us, and it may not be amiss to emphasize once more the line of treatment evolved by our best obstetricians in the last thirty years.

1. Absolute rest in bed in the Fowler position.

2. Ice cap to lower abdomen if there is no distention. If there is distention, relieve it as completely as possible, before applying cold.

3. No violent catharsis. If the bowels are not moving regularly an enema should be given every other day. This relieves pelvic congestion.

4. Maintain and if possible strengthen the patient's resistance. This is best done by giving repeated small blood transfusions. From 150 to 250 c.c. should be given every three or four days. The same donor should not be used more than three times. The transfusions should be started as soon as the diagnosis is made. The earlier they are given the more marked their effect. If blood transfusion is not feasible, foreign proteins may be injected intramuscularly. Various foreign proteins are now available, but whole blood is probably best. It is doubtful if any of them are of much value unless the injections are followed by an increase in the white cell count of the blood. The patient's appetite should be carefully watched. Diet and medication should be directed toward the building of blood elements. Sunshine and fresh air are very important, and the patient's bed should be wheeled to the porch for a short time each day if weather conditions permit.

5. Last, but by no means least, keep out of the uterus, especially with the curette. One cannot serve long on the wards of any large hospital without feeling that, except for the obstetric forceps, the most dangerous weapon in the hands of a great many men is the well-polished curette. That person, whatever his reputation or skill who introduces a curette in a uterus that is the seat of an acute or subacute infection either ignores, or is pitifully ignorant of, the pathological anatomy of the infected pelvis. Curettage causes exacerbation and dissemination of the infection, and if the patient does not die of a septicemia she is fortunate, indeed, if she is not left an invalid for life.

In conclusion I wish to thank Dr. F. L. Adair,

Chief of this Department and Dr. A. C. Beck of Long Island for their valuable counsel and cooperation; also, Miss Mary Manning of Long Island for her practical assistance throughout the whole period of the investigation.

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THE THERAPEUTIC USE OF OXYGEN AND CARBON DIOXIDE

H. P. MILLER, M. D.

St. Anthony's Hospital

ROCK ISLAND, ILLINOIS

The purpose of this article is a brief review of the therapeutic use of oxygen and carbon dioxide. The use of gas in medicine goes back many years to the original use of nitrous oxide in anesthesia in combination with oxygen. This addition to our armamentarium is well worth considering. The apparatus is simple and can be operated successfully under the physicians' directions by a qualified nurse.

Carbon Dioxide and Oxygen Mixture. Professor Yandell Henderson¹ studied the use of carbon dioxide and oxygen in resuscitation from carbon monoxide poisoning. By animal experimentation, later clinical trial, he arrived at the conclusion that a combination of 5% carbon dioxide with 95% oxygen was the best proportion. The carbon dioxide stimulates the respiratory center while the oxygen tends to force free the carbon monoxide from the hemoglobin according to the principle of mass action. The mixture is conveniently applied by means of the "Inhalator." This is simply a device consisting of a mixture of 5 per cent. carbon dioxide and ninety-five per cent. oxygen in a single portable tank from which the gas passes through a reducing valve reading in liters per minute into a rubber reservoir bag then on into a mask from which the

patient aspirates the gas. On expiration, the breath passes out through an exhaling valve to the open air. The apparatus is especially valuable in first aid work. Operation by firemen and industrial workers has proved successful in emergencies. The mixture is valuable wherever artificial respiration is used. The machine does not force the gas into and out of the respiratory tract. Artificial respiration is performed by the prone pressure method and the gas is inhaled by the patient in the normal manner in which air is breathed. A large number of these inhalators are now in use all over the country, police departments and fire departments being equipped, also many ambulances and a few hospitals.

Oxygen. Carbon dioxide and oxygen may be used separately. Pure oxygen has proved itself of value in pneumonia, cardiac conditions, asthma, hyperthyroid crises and war gas poisoning.² Contrary to older opinion, it is possible to raise the oxygen content of the blood even in normal persons as well as in pneumonia and allied pathological conditions. This fact rests on a sound physiological basis.³ In a normal man, breathing of three liters of oxygen per minute will decrease the percentage of unsaturation from 4.4 to 1.87. In pneumonia, instead of carrying the full load of ninety-five per cent. oxygen, the hemoglobin may be as low as eighty per cent. saturated. Briefly, the deficiency is due to part of the lung tissue being consolidated and to thickening of the membrane lining the aveoli through which the gas must diffuse. Blood leaving the lungs is then a mixture of unsaturated blood from the diseased portion and saturated blood from the healthy portions. An equilibrium is reached which is below the normal saturation point. By breathing a stronger oxygen atmosphere than normal the partial pressure of the gas is increased in the alveoli. This will favor more rapid diffusion through thickened membranes of the diseased portion also allow increased oxygen to go into simple solution in the blood of the diseased and healthy portions. Therefore, the final mixture will be nearer the normal oxygen saturation when equilibrium is reached. When the supply is just on the border line of being adequate to supply the tissues and nerve centers such a help may turn the tide to recovery. Easier and

deeper breathing, slowing of the pulse, lessened cyanosis and greater comfort are noted in the patient. A point has arisen as to the possible harm from the continuous use of oxygen. Animal experimentation has shown that after a long period of time some edema may be set up in the aveoli and bronchioles. In the use of oxygen for as long as a week by the oxygen tent method there is no evidence experimentally or clinically that any harm results to the tissues exposed to the gas.

The nasal catheter method, the so-called oxygen tent method and the oxygen chamber constitute the three modes of application used. In both the nasal method,⁴ and the oxygen tent method the same type of apparatus is used to supply the gas. The high pressure commercial oxygen tank of two hundred and twenty cubic feet capacity supplies the gas. This contains oxygen enough, ordinarily for a maximum of 20 hours continuous administration, about 5 to 7 liters being consumed per minute by the patient. This tank has a reducing valve which reduces the pressure down to the low pressure suitable to breathing. The reducing device is similar to the reducing valves that have been used for many years on gas anesthesia machines. This reducing valve has a small gauge on it which indicates the flow of gas in liters per minute. Rubber tubing connects the reducing valve to the nasal catheter or to the oxygen tent. If the nasal catheter method is used the rubber tubing is connected to a glass Y and two size sixteen soft rubber catheters are inserted into each nostril back almost to the posterior fornix. These have lateral perforations in them in addition to the perforations at the tip. The catheters and Y tube are brought up to the forehead and attached with adhesive. This is a very efficient method of administering oxygen. The face is exposed for administration of fluids and the only discomfort is that of having the catheters inserted into the nostril and the fact that they must be removed and cleaned about every eight hours. A greater concentration can be maintained in the alveoli with the catheters than by the tent.

The canvass oxygen tent is of proper size to enclose the head and has suitable windows for observation. The rubber tubing is connected to an inlet in the roof and the oxygen blows down

over the face. An advantage of the tent method is that it can be used on infants. A disadvantage is the celluloid material used in construction of the windows. This material in the presence of oxygen is extremely inflammable. A safer material should be developed. In using the tent or catheter method carbon dioxide can be added in by means of a Y connection and administered to the point of slightly stimulating the respiration if this effect is desired.

The respiration calorimeter of the physiologists might be regarded in a way as a type of oxygen chamber. The oxygen chamber has been used in some of the hospitals in the larger centers or clinics and is a very desirable method but very expensive to construct a special room for this purpose. At one clinic⁵ they have reported splendid results on the use of this oxygen chamber type of administration in cases which apparently were moribund before being so treated. The chamber is simply an air tight room in which the oxygen is maintained at a certain concentration and means are present for removal of carbon dioxide and maintenance of proper temperature and humidity.

One of the things that will serve to popularize use of oxygen has been pointed out by Barrach. Ordinary commercial oxygen is suitable for use medically. Oxygen for commercial use is now made all over the country in towns of even moderate size for the trades. Our local manufacturer states that his gas is absolutely pure except for a slight trace of argon which is an inert gas and is, of course, present in ordinary air also in a very small quantity. A refill of a tank in our locality costs four dollars and this is sufficient to supply a patient for 10 to 20 hours, depending on the amount used. A patient can be kept in an oxygen atmosphere for a very reasonable sum.

Carbon Dioxide. Carbon dioxide is a stimulant for the respiratory center. To use it alone no elaborate apparatus is necessary. A small "D" size low pressure tank does not need a reducing valve. The tubing is directly connected to the opening valve on the tip of the cylinder and passes out through a wash bottle of water acting as a gauge to the amount of gas flowing. The bottle is connected with an ordinary funnel by rubber tubing. The funnel is held near the

patient's nose and mouth and the gas breathed in. After three to six breaths the respirations will start to be speeded up and this is the effect desired. Carbon dioxide has been used by us many times for hiccups with good effect. Hyperventilation of the lungs as the patient is coming out of the anesthetic is a recent and valuable application. By switching to a strong concentration of carbon dioxide as the patient comes out of a gas anesthetic the lungs can be opened up and the respirations speeded up at will. The experimental work of Yandell Henderson⁶ has shown that postoperative pneumonia probably starts as an atelectasis of lobules. In dogs induced atelectasis could be cleared up as shown by their x-ray studies by the use of these inhalations. This is an important point when we remember one death in two hundred and forty, postoperatively, is due to pneumonia. In addition to the post anesthetic use, inhalations of carbon dioxide may be given three times daily for a few minutes for the first three or four days during the period in which postoperative pneumonia is common. This applies especially to the upper abdominal operations where coughing is avoided and the lower chest splinted because of pain.

SUMMARY

Carbon dioxide and oxygen are used alone or in combination. Oxygen is used alone in the oxygen tent, nasal catheter method, or oxygen chamber. Oxygen is used in combination with carbon dioxide in the inhalator. Finally, carbon dioxide is used alone for hyperventilation of the lung and for the treatment of hiccups. Suitable apparatus for the use of gases is available and is economical and easily operated.

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THE USE OF BACTERIOPHAGE IN STAPHYLOCOCCIC INFECTIONS

A. A. JANSON* and
REUBEN L. LARSEN, A.B., M.D.,†
EVANSTON, ILL.

Bacteriology is, comparatively speaking, a new science. It has, however, during the short course of its existence yielded an abundance of useful information and is now one of the most important of the basic medical sciences. Through bacteriology, the specific factors in the etiology of many previously obscure conditions have been disclosed; the interpretation of the pathogenesis of infective processes has been clarified; effective therapy, active and prophylactic, has been made possible in many instances; prognosis has been made more intelligent and rational. Every branch of clinical medicine has been perceptibly and favorably affected by the knowledge supplied through the pursuit of the study of this new science.

Immunology, the study of ways and means of protecting the body against bacterial invasion, is undoubtedly one of the most important of the contributions of bacteriology to clinical medicine. Bacteriology has afforded the basis for theoretical conceptions and actual accomplishments in immunology which has elevated the latter to a plane so highly developed that it is frequently thought of as a special science, though it is essentially a component of the broader science of bacteriology. The study of immunity has opened a field so vast that it offers practically unlimited opportunities for research into problems but little understood as yet.

It is our purpose to discuss but one phase of immunology and to submit our impressions and experiences in the making and use of bacteriophages.

Historical—It is of interest to note that certain immunologic principles were utilized by primitive peoples, thousands of years ago. Some are known to have treated the bites of poisonous snakes by the application of a paste containing the specific venom of the offending reptile. It is said to have been a common practice among ancient Chinese people to remove the crusts from

smallpox lesions and to apply these crusts to the nasal mucous membranes of unaffected persons, thereby effecting immunization through a rudimentary method of inoculation. Other immunologic practices have been recorded, procedures which were effective though empiric. The step between ancient empiricism and modern rationalism and specificity in immunologic methods was a long one. The dawn of modern immunology begins with the time of Louis Pasteur.

Pasteur it was who conceived the idea that invading bacteria might be led to bring about their own destruction. His early work was done with the anthrax bacillus which was at that time a menace to the French sheep breeders and a serious economic problem to the nation. Through experimentation and practical application, he demonstrated that anthrax could be eradicated by vaccination. Thus were the basic principles of immunology established. Metchnikoff elaborated on Pasteur's work and gave it a broader significance. Under the microscope, he observed that leukocytes possessed the property of destroying and absorbing debris and bacteria and he it was that applied to them the name "phagocytes," derived from the Greek term meaning "eating cells."

Scientific experimentation requires a certain understanding of the underlying factors or principles of the problems under investigation. While Pasteur and his followers had unfolded the basic principles of immunity, it remained for the German scholar Ehrlich to evolve a workable and understandable theory of their mode of action. He projected his famous "side-chain theory" which, while it may have been incomplete or imperfect, was plausible and understandable and stimulated experimentation which has resulted in many invaluable contributions to the advancement of clinical medicine in general and of bacteriology in particular. Without such a working-rule as the Ehrlich theory, many valuable discoveries (such as the Wassermann reaction, based on the principle of complement fixation) would probably not have been possible.

One year before the death of Ehrlich in 1916, Twort¹ reported his remarkable discovery, known as "Twort's Phenomenon." This was to the effect that bacterial cultures contain ultra-microscopic particles, developed by the organisms in the culture, which are capable of destroying

*Director, North Shore Clinical Laboratory, Evanston, Illinois.

†Clinical Assistant in Gynecology, Northwestern University Medical School, Chicago.

the bacterial growth. Two years later, in 1917, the French scientist d'Herelle² corroborated Twort's findings and, by improving upon his procedures, succeeded in elaborating a practically available substance which was capable of counteracting the activity of the bacteria in the culture from which it was isolated. These particles were regarded as ultramicroscopic bacteria by d'Herelle and he called his preparation a "bacteriophage"—something which eats or destroys bacteria.

Since d'Herelle made his first report on bacteriophage in 1917, more than two thousand papers have been published on the subject. Notable among these contributions is the extensive work of Besredka³ whose procedures varied somewhat from those of d'Herelle. Besredka used old cultures to obtain the substance which he termed "antivirus" while d'Herelle and his followers used young, actively growing bacteria. Arnold⁴, Bordet⁵ and others, with whom we are inclined to agree, believe that the substance known as bacteriophage is not an ultramicroscopic bacterial growth but a ferment. Other valuable reports are those of Rice,⁶ Larkum⁷ and Bozy.⁸

Early investigators in bacteriology observed certain cultural irregularities in bacterial growth and noted that these irregularities were especially evident with bacteria from the intestinal tract. With the development of knowledge concerning bacteriophages, it was found possible, in many cases, to isolate a phage from the feces of patients convalescing from infection, and also from sewage. This probably explains these cultural irregularities. Arnold, of the Illinois Public Health Department, has isolated a phage from the Chicago River. Such discoveries are of clinical importance and open wide fields for the future of bacteriophage research.

Laboratory Methods. When the use of a bacteriophage is contemplated in the treatment of an infection, it is of the utmost importance to first ascertain whether or not the available phage is active against the specific infecting bacteria. By obtaining a culture from the infected area, the efficacy of the phage may be tested in vitro before being used in vivo. The following method, a simple and feasible one, is used:

Make two cultures, one in 50 c.c. of broth and one on plain agar.

Incubate the agar culture for 12 to 18 hours.

Incubate the broth culture for 4 hours, then divide it

among a number of sterile tubes, depending on how many bacteriophages are to be tested.

Label one of these tubes "Control" and add nothing to it.

To each of the other tubes, add one-tenth volume of the phage to be tested. Label them properly for identification.

Incubate all the tubes for 12 to 18 hours or longer.

If any of the phages used are effective against the organism being tested, the cultures to which these have been added will be clear, indicating destruction of the bacteria.

The control tube should be cloudy, indicating unimpeded growth.

Varying degrees of clearness may be observed in the different tubes. In such a case, the phage which has produced the clearest solution should be chosen for clinical use.

If none of the phages used will clear up the culture, it is an indication that none of them could be expected to be clinically effective. An autogenous bacteriophage should then be prepared. This may be accomplished through the "stepping-up process," as follows:

Make two cultures, one in broth and one in an agar tube. Incubate both for 18 hours.

Filter the broth culture through a Berkefeld filter.

Inoculate the surface of an agar plate with a loop of filtrate and a loop from the agar tube.

Incubate the agar plate for 18 to 24 hours.

Pick out the abnormal colonies, those with the "chewed" edges, and transfer them to another broth culture.

Incubate the new broth culture for 4 to 6 hours.

Add one-tenth volume of the first filtrate to the broth. Incubate again for 24 to 72 hours.

If the broth becomes clear, it contains a specific bacteriophage; if not, the process may be repeated until it becomes active.

Filter the clear broth through a Berkefeld filter.

The filtrate contains the bacteriophage in the form for clinical use.

While it is extremely desirable, as mentioned before, that the available phages be tested in vitro against a culture of the specific offending organism, before being applied clinically, it is not always possible or practicable to do so. Many conditions may make the delay inadvisable. A polyvalent bacteriophage may then be tried. While the use of such preparations will not be uniformly successful, it can do no harm and will succeed in many cases provided the diagnosis of the type of organism is correct and the polyvalent phage contains the antagonistic substance for the particular strain. We now have a polyvalent bacteriophage which is effective against more than thirty strains of staphylococci and

which has proved efficacious in a number of cases where cultures of the infecting organisms were not available.

Clinical Application. Most of our experience with the use of bacteriophages has been limited to its application locally at the site of infection and principally in the presence of staphylococcal infections. In some cases it has also been intramuscularly injected for a systemic effect. Local physicians have used our stock preparations and autogenous phages in the treatment of such varied conditions as infections in the external auditory canal and the nose, simple furuncles, multiple and persistent furunculosis, carbuncles on the neck and buttocks, secondary abscesses, etc. Their usual method of procedure is as follows:

About 1 c.c. of the broth containing the phage is injected directly into the infected area.

A gauze or cotton dressing, saturated with the solution, is placed over the infected area, covered with oiled silk and held in position by a bandage or adhesive strips.

The dressing is kept moist by periodically saturating it with more of the solution.

When the infection is in the ear canal or the nose, pledgets of cotton saturated with the solution are left in the cavities.

Intramuscular or intradermal injections of the solution may be used in addition to the local treatment when indicated.

The results from this treatment have been uniformly satisfactory. No failure has been encountered where the phage has been properly selected by typing in vitro previous to clinical application. Pain is promptly relieved, usually within a few hours, and a marked improvement is usually seen within twenty-four hours. When the infection is not too far advanced, abscesses are frequently absorbed without drainage. If the infection is advancing, localization takes place rapidly, drainage is established and often completed within forty-eight hours.

Discussion. Bacteriophage is made up of ultra-microscopic bodies which, whether they be bacteria or enzymes, are capable of reproduction as demonstrated through their growth in a culture. They reproduce at the expense of the bacteria in the culture which are dissolved and destroyed. Microscopic examination of a culture which has been exposed to an active bacteriophage shows no trace of bacteria or cell debris.

Repeated freezing of a solution of bacteriophage does not destroy its activity but heating to

a temperature above 75° C. does. Injection of a bacteriophage into an animal stimulates the production of an antibody that neutralizes the lytic action of the phage. The fact that there is a large amount of protein material in the bouillon together with the by-products of metabolism of the young culture of bacteria, may be of significance.

CASE RECORDS

Case 1. Because of an unusual circumstance attending the successful management of this case, a rather full report is warranted.

The patient was a woman, 60 years of age, a diabetic who had for a long period shown a constant blood sugar level of 200 to 250 mg., though glycosuria was absent. For four years she had suffered from furunculosis constantly, most of the lesions appearing about the face and neck. The causative organisms were found to be staphylococcus albus and staphylococcus epidermidis. We had made two autogenous vaccines which had been tried without giving any relief. Her physician then determined to try a bacteriophage. Our stock phage failed to destroy the organisms obtained from the infected area, in vitro. In spite of this, we used it locally, but it failed in vivo as well. An autogenous bacteriophage was then prepared which, in spite of being repeatedly stepped up, failed to cause lysis of the infecting organisms in the test tube. Finally, on purely empiric grounds, we prepared another autogenous bacteriophage, using 2% dextrose broth in place of plain broth. This phage proved effective in vitro.

At this time, the patient was under the care of a surgeon, in addition to her regular physician, because of a carbuncle on the cheek. Because of her diabetes, the surgeon hesitated to incise it. Hot boric compresses irritated her and her condition was becoming serious.

When the dextrose phage was completed, the physician injected 1 c.c. directly into the carbuncle and applied a dressing saturated with the solution. Within two hours, the pain had subsided and, within 24 hours, free drainage had been established without the aid of surgery. The infected area was kept constantly covered with a dressing saturated with the bacteriophage and daily intramuscular injections of 1 c.c. of the solution were administered. A total of 20 injections were given.

The carbuncle healed promptly, without leaving a scar, and she has been entirely free from similar infections since that time, a period of nine months.

Case 2. A woman, 43 years of age, came to her doctor after suffering for three weeks from a carbuncle in the gluteal region. During this time, it had opened spontaneously and drained and closed again several times.

A culture showed a strain of staphylococcus aureus which was lysed in the test tube by one of our stock bacteriophages of a similar strain. The abscess was infiltrated with 1 c.c. of the phage and the dressings were kept saturated with the phage all night. Within 12 hours, the pain was relieved and free drainage

established. After 24 hours more, the abscess stopped draining and healed rapidly, granulating from the base outward.

Case 3. A man, aged 52, presented himself with a furuncle within the nose. A culture revealed the staphylococcus aureus which succumbed to our polyvalent bacteriophage in the test tube. The nostril was packed with cotton saturated with the bacteriophage. This was left in place over night. The abscess was promptly absorbed without draining and no further treatment was necessary.

Case 4. A male, 28 years of age, was referred for typing of infection. He had a traumatic abscess on his leg which was causing him great pain. The culture showed the causative organism to be the staphylococcus albus epidermidis and the broth culture cleared after incubation with our phage No. 7, made from a similar strain.

The infection was spreading at this time. One c.c. of the phage was injected into the infected area and the dressings were kept wet with the solution. Within 24 hours, the infection had localized but was still very painful. The area was reinjected with 1 c.c. of the phage and the dressings continued as before. Drainage was established spontaneously and within 72 hours of the first injection, drainage was complete, pain was completely relieved and granulation was beginning.

Case 5. A woman, aged 55, had had a series of styes over a period of several months. The same condition had occurred periodically for the past several years. When seen by us, she had a row of draining styes which were causing great discomfort.

The culture showed the staphylococcus albus epidermidis as the offending organism and it responded, in vitro, to our polyvalent bacteriophage. Local applications of this phage for 24 hours caused complete disappearance of the styes and there has been no recurrence in the past two months.

Case 6. This case illustrates the necessity of using a specific bacteriophage for a specific organism. A man, aged 71 yrs., had a carbuncle on his back. He also gave a history of having had a lung abscess four years previously. It was impossible to obtain constant cultures. It was a polybacterial infection showing various types of cocci and bacilli at different times. Our polyvalent bacteriophage was nevertheless tried but without success.

Case 7. An exceedingly painful condition was seen in a woman, aged 32, whose external auditory canal was literally filled with small furuncles. The canal was closed so tightly that she could hear nothing in that ear. She had been using a commercial preparation of bacteriophage in a jelly form for two weeks without effect. There was no drainage at the time we saw her and no culture was obtained.

A pledget of cotton saturated with our polyvalent staphylococcus bacteriophage was applied over the external ear and kept moist. Within 24 hours, the pain was notably decreased and drainage established. A culture was then made which revealed a staphylococcus which was sensitive to the phage used. Within 72

hours, the pain was entirely gone, drainage had ceased and granulation had begun.

Case 8. A woman, aged 37, suffered from a traumatic infection in the distal phalanx of one of her index fingers. When first seen, it was a spreading cellulitis, without localization, and streaks of lymphangitis were seen running up the hand and well above the wrist. No culture was possible at the time so the area of greatest infection was injected with one-half c.c. of polyvalent bacteriophage and constant wet dressings, saturated with the phage, were begun. In 12 hours, the infection had localized and the lymphangitis had disappeared. Healing did not take place at once because considerable sloughing eventually took place but no more difficulty was encountered as far as the infection was concerned.

A culture taken after drainage had been established showed the staphylococcus aureus which was susceptible, in the test tube, to our polyvalent bacteriophage.

Case 9. A boy, aged 4 yrs., had an abscess of the lower eyelid. It was not draining and no culture was obtained. Local application of the polyvalent phage caused such rapid disappearance of the lesion that it was impossible to have the child returned for a culture or further observation.

Case 10. A surgeon, past 70 years of age, had been taking a series of vaccine treatments for arthritis for the past year. At this time, every injection was followed by an abscess and when seen by us he had about five abscesses on each arm. They were large and contained great quantities of pus though they did not cause much pain. Repeated cultures were made from a number of different abscesses but none of them showed any growth. The abscesses were sterile.

In spite of this, each abscess was injected with 1 c.c. of our polyvalent bacteriophage and dressings saturated with the phage were applied. The same procedure was repeated the following day. In two days, all the abscesses had disappeared and there have been no recurrences although the vaccine injections have been continued.

Observations. Organisms with like cultural characteristics do not necessarily respond to the same bacteriophage. A culture of staphylococcus aureus may not be lysed by a phage prepared from another culture of staphylococcus aureus. The same is true of staphylococcus albus. There are, apparently, numerous strains of similar organisms with similar cultural characteristics and the phage must be specific in order to be active. On the other hand, a staphylococcus aureus bacteriophage will, at times, destroy the staphylococcus albus and the reverse is also true.

This observation emphasizes the fallacy of relying too greatly on stock preparations. Unless such phages are prepared from a large number of strains of the specific organism, failures will be frequent. It also substantiates our conten-

tion that, whenever possible, cultures of the infecting organism should be obtained and tested, in vitro, for its reaction to a number of specific bacteriophages or a polyvalent one. When a culture cannot be obtained, a polyvalent preparation should be used. The greater the number of strains represented in such a preparation, the greater will be the probabilities for success. When the available phages fail to destroy the culture in the test tube, an autogenous one should be prepared. Our own experience indicates that when a phage is inactive under laboratory tests, failure will attend its clinical use; and that in nearly every case where activity has been demonstrated in the laboratory, its clinical use will be attended by success.

Surface infections, especially in the region of the face, are usually caused by the staphylococcus albus while deeper infections, such as furuncles and carbuncles, are usually caused by the staphylococcus aureus.

The local application of bacteriophage is now also being accomplished through the application of a salve or jelly with the phage incorporated into it. Our experience with this method is as yet too limited to discuss but, theoretically, it should have some advantages. Intramuscular and intradermal administration is also being largely used in the treatment of chronic infections, especially of the streptococcic types, with considerable success. Many cases of chronic arthritis, where the streptococcus is recovered from the nose, throat, rectum or feces, have been successfully treated in this way.

CONCLUSION

Bacteriophage therapy offers a simple and unusually effective method of combating many types of bacterial infection and opens a vast field for research. Its present accomplishments are limited but real; its future possibilities are unlimited and can only be conjectured.

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CRANIO-CEREBRAL INJURIES*

J. D. KIRSHBAUM, M.D.

CHICAGO

I have purposely omitted the term skull fracture, as the subject, because it is a poor one and conveys no idea as to the extent of cerebral damage resulting from a head injury. It is only in recent years that the term skull fracture is being discarded for one that is more accurate anatomically.

Cerebral injuries are characterized by injury to the skull or calvarium and the cranial contents, cerebrum, cerebellum or medulla. Injuries to the skull may be divided into: Depressed fractures, simple or compound; Linear fractures of the vault; and fractures of the base. As to the incidence of fractures of the vault and base, about 90% occur in the base and 10% in the vault. (Lecount and Affleback—in a series of 450 post-mortems.) Cerebral injuries may be divided into: (a) Concussion, (b) Contusion, (c) Laceration of brain, (d) Hemorrhage of the middle meningeal artery which may be extra-dural or sub-dural. Concussion is the simplest form of injury to the brain characterized by an immediate, generalized loss of consciousness. Contusion is a more severe type of injury characterized by being progressive and a tendency for localization. Etiology of head injuries is well known. At present the automobile has increased the cause of head injuries over 300%. Injuries may be due to falls, blows, bullets, aeroplanes, etc. The diagnosis of the different types of injury is very important from the therapeutic standpoint. I think that there has not been sufficient attention given to the careful examination both on admission and the following twelve to twenty-four hours after entrance into the hospital. Very frequently when a patient is sent to the hospital with a head injury the first thing the doctor is concerned with is, "Is there a skull fracture evident?" The

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patient is then hurriedly sent to the x-ray department. Many a patient has been killed or at least his death has been hastened in this way by the carelessness of the doctor, and the roentgenologist indirectly, because he is just fulfilling the doctor's request for a picture. Injuries to the skull alone never produce serious trouble unless the fracture is a depressed one, and so, of what advantage is the x-ray if it does reveal a linear fracture of five or six inches long, if unless from a medico-legal standpoint. The examination of the patient will tell the doctor immediately as to the type or intensity of a head injury. The things that we are very much concerned in are:

1. Pulse: Is it rapid and thready as in shock; or is it slow and irregular. Usually below 70 is indicative of increased intra-cranial pressure.

2. Respiration: Very slow and irregular (Cheyne-Stokes) as in intra-cranial pressure, or very rapid as in shock.

3. Temperature: As the intra-cranial pressure increases, the temperature rises and when above 102 it is a grave sign.

4. Blood Pressure: This should be recorded every half hour, for the first few hours and then every hour because it is of great diagnostic help. If the patient is admitted in shock the blood pressure will be subnormal, but as the intra-cranial pressure increases the blood pressure rises until when medullary compression occurs it begins to fall.

Concussion, which is the simplest form of brain injury, is characterized by an immediate generalized unconsciousness from which the patient may or may not be aroused; this varies from a stuporous condition to coma, and is usually followed by dizziness and headache. This may soon be followed by nausea or vomiting and some disorientation. There may or may not be a skull fracture present. There is very little rise in the intra-cranial pressure. Recovery may follow after a brief interval; this is often seen in boxers and is frequently known as "punch drunk." Deep reflexes may be lost or diminished. If the injury is severe, i.e., basal skull fracture, there may be associated with it concussion, contusion, or laceration of the brain. Such an injury is diagnosed by bleeding from the ears, nose or mouth. There may be an escape of spinal fluid from the ears or from a

wound in the skull. Ecchymosis of the eye or mastoid swelling may be present. As the intra-cranial pressure increases edema of the brain becomes more intense. This may be detected early by the measurement of the spinal fluid by the mercury manometer. Normally it is up to 12mm. and over 30mm. is a dangerous sign. Of next greatest diagnostic value to the mercury manometer for determining increased intra-cranial pressure, is the ophthalmoscopic examination of the fundi. In the first five to six hours following an injury no changes may be noted in the fundi, but soon dilatation of the veins of the retina and a blurring or haziness of the margins of the discs may be noticed. As the pressure increases the disc becomes hyperemic and edema appears over the nasal half of the disc. Choked discs appear very late and it is a terminal finding. The deep reflexes are usually absent or diminished. Localizing signs should be noted, i.e., paralysis of a leg or arm or facial involvement. Unilateral dilatation of a pupil usually denotes a cerebral hemorrhage on the same side as the dilatation. Dilated fixed pupils are a poor prognostic sign; constricted fixed pupils are usually due to hemorrhage of the pons and medullar compression.

Middle meningeal hemorrhage results from tearing of the vessel following skull fractures. It does not occur as frequently in children because of the ability of the skull to mold itself. A hemorrhage may be extra-dural or sub-dural. The amount of blood escaped is not what kills a patient, it is the degree of compression and edema of the brain. Usually as the hemorrhage spreads, focal signs may be elicited, i.e., paralysis of an arm, leg, or of the face; increased reflexes on the same side; and finally, convulsions. The history of a lucid interval of consciousness, followed in a few hours by unconsciousness is usually diagnostic of middle meningeal hemorrhage.

The pathology of head injuries is still not definitely settled. In cases of concussion that die nothing may be found microscopically. In the severer forms of concussion or contusion petechial hemorrhages may be seen in the cortex. The brain may be lacerated and edema is a very frequent finding. The perivascular and pericellular spaces are edematous, the brain is wet; changes may be noted in the choroid plexis and

ependymal cells of the ventricles. The choroid plexus shows vacuolization. The ependymal cells show an increase in length with edema. An increase in the perivascular and pericellular spaces in the cortex may be seen. Complications which may follow are: 1. Septic meningitis, 2. Brain abscess, 3. Epilepsy, 4. Post traumatic neurosis or psychosis.

Treatment, of course, will depend on the condition of the patient and the amount of cerebral damage. Upon admission the patient should be put to bed immediately, and kept very warm. If shock is present he should be given hypodermoclysis about 1,500 cc. of saline and 150 grams of glucose. Morphine should not be given in any head injury, first, because it masks the picture clinically, and second, because it depresses the medullar center which is already depressed. If there are any signs of increased pressure such as, restlessness, bradycardia, stertorous respirations, and the rising blood pressure, hypertonic solution should be started; 50% magnesium sulphate—150-200 cc. should be given as a retention enema every 3 hours. 50% glucose—50-100 cc. may be given intravenously every 6 to 8 hours. Paraldehyde, chloral hydrate, and bromides are safe hypnotics to use. As to spinal puncture, this is still a point of dispute. There are two schools—one advocating repeated spinal punctures every 6 to 8 hours as the pressure is increased, and the other treating the pressure on a physiological basis and reducing it by the hypertonic solutions of magnesium sulphate, glucose, or sodium chloride. I feel that spinal puncture is a dangerous procedure; very frequently the sudden release of fluid allows the medulla to suddenly become impinged in the cisterna magna, or, in cases of hemorrhage, where nature has sealed off a bleeding point by a clot wedged in by the spinal fluid, a sudden release of the fluid allows the clot to become loosened and hemorrhage is started again. We feel a puncture is indicated when the temperature rises over 103 degrees, or in the presence of convulsions. Stimulants, i.e., caffeine and adrenalin, should not be given. If a patient dies in the first six hours usually nothing can be done because of the severe injury to the brain.

After shock is combated, which occurs after five or six hours, a patient may be moved with safety for an x-ray. Regardless of how trivial

a head injury may be, it should be seriously considered as a brain injury and the patient should be kept in bed under quiet conditions for at least two weeks, and as long as six weeks if necessary.

A laceration of the scalp should be debrided, hair about the wound shaved, and the wound sewed up tight if seen early. Drains are not necessary. Depressed skull fractures should be elevated as soon as the condition is safe. A decompression should proceed this procedure. In cases of hemorrhage, a subtemporal decompression should be performed with removal of the clot. Children stand injuries much better than adults since their skulls are not such a solid casement and yield more easily to injuries; thus the mortality of children is half as great, about 15% to 16%, whereas in adults it is about 31%. Just a word about headaches that persist due to adhesions; the use of lumbar insufflation, which is the removal of fluid and replacement of air, has been of great aid. I have had no experiences except that I have seen patients develop excruciating headaches after insufflation of air for ventriculography.

In conclusion, I would like to mention a series of skull injuries that I have collected for the past three years from the Woodlawn hospital. There were 41 cases of head injuries, 22 of which were considered as skull fractures, having definite signs and symptoms of injury to the brain; a mortality of 18.5%, which is probably half of the mortality that one sees in an institution, as I was able to observe while I was associated with the Cook County Hospital. This decrease in mortality may be due to the type of patient that one sees in private practice. Post traumatic neurosis is a very sad phase of pathology. An early settlement of the case will bring happy results very frequently.

826 E 61st Street.

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THE FEVER TREATMENT OF PARESIS BY MEANS OF THE DIATHERMY CURRENT AND THE ELECTRIC BLANKET*

SIDNEY D. WILGUS, M.D., and

LEAH LURIE, M.D.

ELGIN, ILL.

The importance of fever as a therapeutic measure in neuro-syphilis has been emphasized within the past few years. The literature shows various recent developments in producing fever, as follows: 1. Hot baths; 2. Injections of foreign proteins (as typhoid vaccine, milk, peptone); 3. Injections of a chemical (sulphur in olive oil); 4. Infectious type as (a) malaria, (b) rat bite fever; 5. Hot air; 6. High frequency currents (Diathermy); and lastly by the electric blanket. In this paper we wish to discuss the last two.

Diathermy fever has the advantage of being produced without the injection of infectious or toxic substances. The rationale of the treatment is based on the following.

The constant temperature in warm blooded animals is maintained by the thermostatic mechanism which is a two fold mechanism, capable on the one hand of regulating heat production;

on the other hand of regulating heat dissipation. To overcome nature's thermostatic mechanism all precautions are taken to eliminate heat dissipation and, at the same time, in diathermy, to pass high frequency currents through the body of the patient and by this means produce an excess of heat, which raises the internal temperature.

Before starting the use of diathermy treatments on human patients certain research work was done on animals, and Dr. Mortimer¹, establishing the primacy of heat in this form of treatment, summarizes his results as follows: The effect is explained on the basis of heat production. Long continued sublethal doses given to rats and dogs are without ill effects. The lethal effect of these currents can be accounted for on the basis of over heat production. In live dogs the different organs heat up at approximately the same rate, the blood serving as an efficient distributing mechanism.

With knowledge of the foregoing in mind in latter 1929, and at the request of Dr. Ralph T. Hinton,† then Managing Officer, Elgin State Hospital, and encouragingly continued by his successor, Dr. Chas. F. Read, of that hospital, we undertook the treatment of paretics with the diathermy current as it was then getting under way at the hospital. This has continued to date and to that method of treatment and also at the request of Drs. Hinton and Read the method by the electric blanket was added.

Technique: Diathermy machines made by a leading manufacturer, are used. We use tinfoil electrodes with sponge rubber back, originated by Dr. C. W. Cocke and Dr. Cash King.² The patient is wrapped in rubber sheets and blankets. The current is slowly but gradually increased to reach its maximum in twenty minutes. The pulse, respiration, and temperature are recorded every fifteen minutes. The temperature rises very slowly at first; but after the first half hour the rise is more rapid reaching 104° in approximately 2 hours.

The current is turned off at 104.5-105 degrees by mouth or 105-106.1 by rectum. The temperature often rises five-tenths to one degree or more after the current is cut off. It then falls slowly. The rapidity with which the

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*From Elgin State Hospital and The Illinois State Psychopathic Institute.

†Mrs. Hinton was the first person to be given this form of experimental fever.

temperature of the patient returns to normal depends upon the amount of covering allowed to remain save in certain rare cases in which the temperature begins to rise again after the drop has begun. This must be looked for in each treatment and remedies applied when demanded to prevent heat stroke. After the treatment the usual patient goes to sleep for an hour or more. On awakening a cooling bath is given and thereafter the patient dresses and resumes his regular affairs of life none the worse for wear.

Findings. Ninety-seven unselected patients with general paralysis received a series of twelve treatments each, given every other day with the temperature kept at 104° or above for at least one hour. Each time patients lost about 5 pounds, but this was regained before the next treatment and at the last showed little change. The final Basal Metabolic rate presented no important changes. Blood picture and chemistry negative. Blood pressure, heart and kidney diseases presented no contra-indications; occasional showers of casts at first aroused apprehension, but we found that omission of treatment for a day or two met the situation. The Wassermanns were not often affected immediately though they may alter even after months and years, as shown by the Von Jauregg malaria literature; the Lange reaction frequently showed a change almost at once; in 27% from paretic to luetic curve; in 24% flattening down. The cell count in the spinal fluid often showed marked improvement; in 22% of the cases a high cell count was reduced to normal at the end of the treatments. Globulin when present before treatment persisted after, but in many cases with marked reduction.

The clinical picture and the serological improvement (cell count, globulin, colloidal gold) do not necessarily correspond; serological improvements occur in some cases not improving clinically and vice versa. However, investigators with malaria find clinical improvement may come at much later dates.

We use Hauptmann's³ modifications of Walter's original method for the determination of meningeal permeability from the blood to the cerebrospinal fluid. The permeability decreased, i.e., returned toward normal, after the treatments in almost all the patients who showed clinical improvement.

Clinical results: As against the expected spontaneous remission rate of 3.5%, in 97 paretics treated we found: 55% much improved; 17% slightly improved; 23% unimproved; 6% died due to progress of disease. 18% of the improved group are at home, and more, awaiting business improvement, will follow. The type we find best for treatment is the exalted type and particularly cases of recent development. Cases from other groups improve less uniformly. Nevertheless we believe that all cases should receive treatment.

Pathology. The brains of our deaths have not yet been examined. Bassoe⁴ and others report that after malaria they find "regression and even arrest of the pathological processes proportionate to the clinical remission." Breutsch and Bahr⁵ report the same findings. Ferraro⁶ draws enlightening conclusions based on findings in 29 autopsies held on the brains of paretics dying after treatment by malaria. One group includes those in which the effect of the fever has been fairly complete resolution of the inflammatory products (mesodermal) of the meninges and brain.

2. Again there often is a limited degree of improvement only, due to the previous destruction of brain cells.

3. A group which includes a considerable number of cases going into definite remission but in which the symptoms return, and then the disease proceeds to run its usual downward course. The reason why, after a remission, the disease returns, it is explained by Ferraro that there is a third pathology in paresis, namely, a chemical pathology with eventual destruction of the ectoderm (parenchymal) cells in the absence of inflammatory mesodermal reaction of note. Thus in this group the inflammatory products are cleared up and for a time the patient is better, but after a certain interval of weeks of remission, the chemical change brings mucoid degeneration within the cells, death of the cells, and rapid mental deterioration.

Neurologicals: There is not often great alteration in the neurological signs. Tissue destruction evidently antedated treatment.

Deaths: Not one died directly or indirectly as the result of the diathermy treatments. One died three weeks after the last treatment; the rest (4) died two to five months after.

Conclusions: 1. All fever treatments are beneficial in paresis, so there can be only one therapeutic agent common to all, namely, the fever. 2. The beneficial results from diathermy compare well with those obtained from fever from other sources. 3. In diathermy we have a method by which without using infectious or other deleterious toxic substances, fever is produced under maximum control and safety. 4. This treatment may be accompanied with or followed by other anti-syphilitic treatment (as recommended in malaria by Von Jauregg and others) although Breutsch and Barr⁵ claim as good results without this addition. 5. Male paretics handle better to this treatment than female paretics. 6. In the main the above findings confirm those made by other writers on diathermy.

THE ELECTRIC BLANKET

This paper will now introduce the subject of the electric blanket method of producing fever. Suffice to say that thirty-one patients received about the same number of treatments as the diathermy cases. The method is easy inasmuch as the patient is simply placed in a large electric blanket with two-stage (2400 milliamperes + 5000 m. a.) control of the current. The patient is also wrapped in ordinary blankets and rubber sheets for the purpose of preventing shorts and secondly for the more easy production of fever. We use it 1 hour and then turn it off for ten minutes and so on throughout the treatment. At 102.8° the current is shut off; thereafter the fever rises to 105° or 106°; after 1 hour of this maximum we begin to unwrap. Thus is developed the exact five hour fever curve of diathermy and other treatments with absolute safety and accuracy.

With thirty-one patients completing treatment, the results paralleled very closely those produced by diathermy. As in diathermy 5% died but without relation to treatments save one passing into convulsions at the height of the first treatment.

One death illustrating Ferraro's⁶ third group records a remission that mysteriously did not hold. F. G., age 37, showed 4 years of symptoms, 16 months of idleness, and 6 months of hospital residence. Was irritable, memory impaired; emotionally unstable, occasional convulsions; feeble and hospitalized. Was given twelve

diathermy treatments. After these was up and about, going to entertainments, etc., and even had a parole of the grounds. He had no more convulsions. In brief, his remission was well marked. This went on for three months when he had a convulsion and died in three days. We witnessed others of this type.

DISCUSSION

(A) Apparently the spirochaetes are not killed by our fever of 105° or 106°, but require 108°F⁷ to 125°F⁸ for this purpose.

(B) Yet the strain may be damaged in approximately 70% of cases, i. e., changed from a malignant to a more benign form⁴ as suggested by the frequent slow reduction of the Wassermann intensity; also by the pathological improvements reported by many observers. But do the spirochaetes here finally die and their pathology disappear? Findings suggest this in some of the favorable cases. In others decidedly not, as shown by our illustrative case going into well marked remission and then weeks later suddenly dying in convulsions as a result of the progressive intracellular changes described by Ferraro.

(C) The fever had no effect on 5% of our cases. Some mesodermal cases were too advanced for successful treatment and in some no doubt fatal intracellular chemical changes occurred. This percentage is common to other forms of treatment.

(D) At any rate a frequent though partial change in the spirochaete occurs almost immediately for we find spinal fluid changes very early, often after two or three treatments only. Remissions continue over prolonged periods as a rule.

(E) But may not the strain once damaged become rejuvenated if the treatment be stopped too soon? The answer is not clear now.

(F) The immediate changes are not always beneficial as shown by our one case going into status at the height of the first treatment and dying in a few hours. Was this lethal result due to an irritating disturbance of the grouped spirochaetes? Or to a sudden increase of toxic discharge from them in their discomfort? Or both? We may speculate on the proper reply.

(G) The fever height seems of importance and we certainly would expect this the fact. For

this reason we desire to maintain the highest possible fever compatible with health.

(H) A considerable group improves to a certain point and then ceases to advance further. Probably regeneration in this group has gone as far as is possible, but falls short of a complete result owing to previous destruction of non-replacable ganglion cells.

(I) Permeability test results suggest the fever brings organic changes, but if so, what? Probably the reticulo-endothelial changes of Breutsch and Bahr or some other similar process.

Conclusion: At any rate the fever is the important therapeutic agent and we are ready to go on record as saying that the electric blanket, while not spectacular, is simple, safe, and efficient, and, in our opinion, is superior to any previously used method of fever production.

750 South State Street.

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FRACTURES ABOUT THE ELBOW JOINT

HARRY D. GROSSMAN, M.D.

CHICAGO

In dealing with fractures about the elbow joint, several normal anatomical facts must be borne in mind. With the forearm extended, the tips of the external and internal condyles and the olecranon all lie in the same straight line, whereas with the forearm flexed, the tip of the olecranon forms the apex of a triangle, the base line being that connecting the two condyles. Furthermore, it must be remembered that the axis of the forearm forms an angle of approximately fifteen degrees with the axis of the arm so that with the upper extremity at the side of the erect body, the forearm is directed outward and downward producing the so-called "carrying angle."

Also some knowledge as to muscle attachments is of value as these help produce displacements in fractures. The flexor tendons of the forearm and hand take their origin from the

internal condyle and the extensor tendons from the external condyle of the humerus. The triceps is inserted into the tip of the olecranon and the biceps into the bicipital groove on the radius.

Of course, fractures about the elbow do not necessarily occur singly but any combinations may occur and these with or without dislocations. However, in a discussion, it is better to consider each type individually and to determine the picture of an uncomplicated fracture. The various types may be conveniently classified as follows:

A. Fractures of the humerus:

1. Transverse supra condylar
2. T or Y shaped
3. External and internal condylar
4. Fractures in the neighborhood of the lower epiphysis

B. Ulnar fractures:

1. Olecranon
2. Coronoid process

C. Radial fracture:

1. Head
2. Neck

The various forms of breaks about the elbow joint may be produced by direct violence as a blow or fall on the flexed elbow, but indirect force, as that occurring with a fall on the outstretched hand with the forearm extended, may also produce a transverse supracondylar fracture, separation of the epiphysis or a break in the external condyle. Muscular action of the triceps may occasionally cause a break in the olecranon at its place of insertion.

In the transverse supracondylar fracture, the break is usually one to two inches above the joint. The lower fragment is most always displaced backward and pulled upward by the triceps drawing up the ulna, so that there is an angular deformity posteriorly. Occasionally the lower fragment is displaced anteriorly when the fracture occurs by direct violence and then there is apparent lengthening of the forearm with loss of prominence of the olecranon.

In T or Y shaped fractures, the lower limit of the line of fracture usually extends into the elbow joint. With complete separation of the condyles, there is widening of the elbow and crepitus. With incomplete separation, no deformity results.

Condylar fractures are usually intracapsular, although some involving the internal condyle

may avoid the joint. In those of the external condyle, the lower fragment is rotated forward and moves with crepitus, independently of the humerus. In the internal condyle intracapsular type, the fragment is pulled upward and backward and the ulna goes with it due to the triceps pull; on extending the forearm, the olecranon appears more prominent and the lower end of the humerus is dislocated anteriorly with the forearm slightly adducted. In the extracapsular type occurring before the age of 19 years, epiphyseal separation may occur with downward displacement of the fragment. The ulnar nerve may be injured in condylar fractures.

In fractures near the epiphysis and in epiphyseal separations in young children, the displacement is backward and laterally.

Olecranon fractures usually are transverse and occur at the base. Unless the tendinous and periosteal coverings are also torn, there is no deformity. When the process is completely severed, the fragment is pulled up by the triceps away from the ulnar shaft. The bones of the forearm are pulled forward so that a sulcus is felt between the detached olecranon and the ulna which becomes greater on flexion of the forearm.

Breaks through the coronoid process are rare, and when they occur accompany a backward dislocation of the ulna. Clinically the diagnosis is suggested by the fact that this dislocation of the ulna reduces more readily than an uncomplicated one and with crepitus, and is more difficult to keep in place.

Radial fractures through the head cause no deformity unless the orbicular ligament be torn; the head remains immovable when the ligament is lacerated, but crepitus may be obtained by rotating the lower part of the radius.

Fracture through the neck occurs between the orbicular ligament and the bicipital tuberosity. The lower fragment is pulled up and anteriorly by the biceps and is more prominent on trying to flex the forearm. Loss of rotation also occurs and the head does not move on passive rotation.

The usual signs of fracture, such as swelling, discoloration, tenderness over the line of fracture, severe pain on trying to move the parts, are all present usually and at times crepitus with preternatural mobility may also be found. X-ray

examinations should be made in all cases with antero-posterior and lateral views, both before and after setting.

In uncomplicated fractures of the humerus the relations between the olecranon and the condyle remain the same, whereas in dislocations these are altered. Also in dislocations, the measurements from the external condyle to the styloid process of the radius is shortened, but is unaltered in fracture, although the length of the arm from the deltoid tubercle to the outer condyle is unaltered in dislocations and shortened in fractures. In fractures, deformities reduce fairly easily, with crepitus, but tend to recur readily, whereas dislocations reduce with a little more difficulty but do not recur so easily after reduction.

Whenever there are small loose fragments in any of these breaks, or when there is definite widening of the elbow due to complete separation of the condyles, or when the olecranon does not reduce properly, open operation is advisable. Approximation of the parts is accomplished either by bone pegs or wiring. Small fragments of bone are removed and at times the radial head may require removal.

All other fractures except those of the olecranon are reduced by traction downward and then completely flexing the forearm on the arm, with the forearm in supination. This position is maintained by bandaging the extremity in flexion protecting the creases by cotton and powder and supporting the extremity in a sling. In olecranon fractures, the forearm is extended on the arm and supinated and an anterior splint applied.

While the bones are healing, it is advisable to see that shoulder, wrist and finger joints are moved daily to prevent stiffness. After ten to fourteen days massage over the site of the fracture may be started and if no pain results, also slight passive motion. Extension, by degrees, of the flexed forearm is allowable, after eighteen to twenty-one days, up to the point of pain so that gradually the angle between the forearm and arm increases. The reverse holds true for olecranon fractures. Gradual flexion is started after three weeks.

Active motion in the elbow joint is encouraged after the third week and usually by the fourth week the sling may be discarded and grad-

ually increasing amounts of exercise be given to the parts until they approximate normal.

4706 Cottage Grove Ave.

THE RELATIONSHIP BETWEEN MENTAL DEFICIENCY AND THE FIELDS OF GENERAL MEDICINE*

GROVES BLAKE SMITH, M. D.

Superintendent, Beverly Farm, Incorporated

GODFREY, ILLINOIS

The recent White House Conference on Child Health and Protection has pointed out not only the needs of the mentally retarded and the feeble-minded, but also the responsibility that rests upon the community to adequately supervise and treat such problems.

At least 2% of our population falls in that group of idiots, imbeciles, and morons who are socially inadequate to meet the complex life of today. Illinois has, therefore, over 125,000 mentally deficient of whom only 5,400 are being cared for in an institutional environment. Do these figures not demand that the medical profession take an active interest in preventing, when possible, this economic burden, as well as altering the family maladjustments and relationships that too often ensue from ill-advised recommendations and plans.

Mental deficiency is not a clinical disease, but a syndrome consisting of organic neurological changes in brain structure, generally associated with structural changes in the body as a whole which result in limitation or even lack of normal mental development, as manifested by intellectual deviation as well as inadequacy in meeting social demands. We are, therefore, no longer content to look upon heredity as playing a major role, although in those families where social maladjustment, because of mental deficiency, can be shown to be a family trait through more than one generation, preventative measures, such as segregation through the child bearing period or selective sterilization, is in order. Sterilization should always be reserved for suitable cases as it is not a cure-all for mental deficiency. Defectives who remain in the community either on parole from the state school or special classes in the public schools have a right to social adapta-

tion, and selective sterilization often makes this possible. The male is by nature homosexual and the crimes of rape, etc., can usually be credited to psychopathic personalities rather than to the mental deficient. The female, likewise, rarely assumes an active role so that her entrance into the fields of prostitution and child bearing is the direct result of exploitation and failure, on the part of the environment, to provide her with adequate safeguards.

The duty of the family physician is three fold, namely, to the patient, to the family, and to the community. In as much as the family physician is the first to make contact with the problem at the birth of the child it is imperative that steps be taken to prevent those factors which play a secondary role in the causation through prenatal influences. A duty also devolves upon him to use wisdom and care in the use of instruments and the use of pituitrin, for the growing number of birth injuries testify to the fact that a certain number of these cases are preventable. The recognition of syphilis as a causative factor for mental deficiency should not be overlooked in cases where syphilis exists within the family. Ascribing syphilis as a major cause of mental deficiency is without foundation, as untold studies have shown the percentage of syphilis among the mentally deficient to be no higher than that in the population in general. The offspring of luetic parents have at least 20% of the chances of showing signs of mental retardation, and the degree of mental deviation is in direct proportion to the adequacy of treatment.

During the early developmental period certain landmarks stand out as pointing to delayed and altered development. Alterations in the ability to nurse, cyanosis at birth, slowness in sitting, walking, talking, and alterations in muscular control are all diagnostic factors that show that some abnormal feature is playing a part. A more careful and rational diet program in these cases of delayed development will do much to overcome the deficiency diseases which tend to thrive with these alterations in mental and physical deficiency. The birth injury group, in particular, should not only receive careful checking, but should have the benefit of orthopedic supervision in the prevention of muscular deformities and muscle wasting. The need of muscle re-education is important particularly where it involves

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the pyramidal tracts as well as the extra pyramidal and basal ganglia group of syndromes. Many individuals who would otherwise be bedridden invalids, due to contractions, can be salvaged if these early measures are carefully watched.

Physical and secondary mental improvement are noticed in those cases where attention is paid to focal infection, whatever its source, including constipation, due either to disease or faulty habit mechanisms. There is nothing, however, that will justify the belief that we can alter the inherent underlying degree of deficiency, through changing these.

The use of endocrine medication, other than that of thyroid derivatives in cretinism, is a controversial subject. The optimism of many, where such states have been unaccompanied by adequate controls, is unwarranted, but it is felt that hope lies in the development of further products which may be of value.

Of great importance in the group of retarded children are alterations in the visual and auditory mechanisms of the child. Sufficient attention has not been paid to the detection of the minor types of aphasia, word-blindness and deafness, the result of cortical atrophy or injury. Too often this group of patients is classed as one of primary retardation when they are, in reality, deprived through the alterations in development and training of these special senses.

Passing from the purely physical aspects, we desire to call attention to changes that have taken place in the psychiatric angles of the deficient personality. The necessity of the early development and guidance of the habit mechanisms and habit patterns of the pre-school defective will do much toward enabling the individual in making satisfactory adjustments, not only in the family circle, but in the special class or institutional environments as the case may be. The guiding principles, which have been laid down for the average normal child are equally good for the mentally deficient, for the same emotional stresses and strains bring about abnormal family relationships. The behavior reactions of the mentally deficient are often not so glaring and outstanding, hence are often overlooked. In the main they result from the restrictions of activities and contact with a normal family life to the more prevalent environment of over-solici-

tousness and over-protection. There is definite need of a more careful working out of these behavior types, particularly as they constitute the outstanding problem of pediatric supervision in the home care of the younger child.

Not only are the minor behavior mechanisms of importance, but the presence of major psychotic episodes are much more frequent than we have realized. The correlation of the body types of Kretschmer with psychic abnormality, have their counterparts in the mental defective as well as in the insane. These aspects need more careful study before more definite generalizations can be made. The major question of the defective delinquents and delinquent defective emphasize the need of careful correlation of these conditions with the psychopathic personalities of everyday life. Toxic mental states are of major importance and often accompany the ordinary disease processes. They often result from dehydration and undernourishment, as well as the inability of the mental defectives, particularly the idiot and the imbecile, to fully make known their wants. Care of these latter groups must therefore be carried out along established routines.

The presence of cyclothymic episodes are quite frequent but, unfortunately, the hypomanic responses do not receive the benefit of hydrotherapy but are often made worse by too much sedative medication. The schizophrenic states often present bizarre pictures when superimposed upon defective syndromes. The fact that the degree and nature of the hallucinatory and delusional responses are not as well marked and that the symbolic characteristics are much more infantile does not prevent our making such a diagnosis. The involutional pictures do not show the same degree of depression and are more apt to be followed by an increase in the childishness of the individual upon clearing. The confusion and the slowing of mental response is more apt to persist as a residual finding. The onset of the arteriosclerotic changes are not nearly so noticeable and must be regarded as more an evidence of general deterioration of mental and physical factors, rather than a characteristic syndrome.

I desire to emphasize, both for the protection of the child and the family, that the family physician should place a true picture of condi-

tions before the parents. This prevents the unwise expenditure of large sums of money for useless medicine, observations, and treatment, and likewise offers the child an opportunity to development, educationally and socially, in accordance with its background. Experience has shown, only too often, that the future hope of families are too often wrecked through attention being paid to the mentally retarded child, so that opportunity to carry on is denied the normal members of the family. The family must early be informed that they are face to face with a problem that will require the use of special classes, in communities where such exist, the use of private schools, in cases where special funds are available, and also that entrance to the state schools at an early age is imperative where any other financial program would lead to disaster. It is important to realize that the earlier the training and education of these individuals, both in habit mechanisms and handicraft, the greater their ability to carry on in a social way. Our future hope lies in the realization that the mentally deficient, of necessity, are not an economic loss, but that with proper training and supervision they can be made social assets. This requires, on the part of the community, a definite program: First. The recognition of the degree and character of deficiency through psychological and psychiatric examination. Second. A means of education through the development of special classes and particularly a vocational placement after such training. Third. An expression of tolerance on the part of the individual community to feeling that they have a definite duty toward the mentally handicapped.

The physician as a leader in community viewpoint, can do much toward bringing about an understanding of the needs of the mentally retarded. Communities in which there is tolerance and a willingness to assume responsibility and understanding offer the utmost in the way of adequate supervision for those who have been properly trained through a special school and institutional work. When approached from the standpoint of ignorance or unwillingness to be bothered the mentally deficient are being taken advantage of. The blame for his delinquency and his maladjustment should be placed upon, not him as such, but upon the community that has not given him the proper chance. The

physician has a definite duty to society in recommending to his patients that the state program is handicapped, as a rule, not through inefficient plans but due to lack of proper financial means to carry these plans out.

Educators, psychologists, and special school teachers have met their responsibilities in devising ways and means to bring about intellectual improvement, but the medical profession has shown marked indifference in neglecting the opportunities which have been offered in the way of personal studies. To adequately get an understanding of the problem, research investigations should be carried out in all of our medical schools and state institutions. In recent years the attention of the community has been focused upon the educational aspects of the deficient through the widespread approach of mental tests. This, however, does not belittle the fact that mental deficiency as such, is primarily a medical problem to be met and faced through medical means, and that it is only through proper research channels that we can look for an intelligent unbiased attack upon the problem.

TREATMENT OF NEPHRITIC EDEMA BY ACID

F. H. Lashmet, Ann Arbor, Mich. (*Journal A. M. A.*, Sept. 26, 1931), calls attention to the fact that it has been known for a long time that in the clinical state of edema there is an excess of water and of chlorides in the body. In the case of nephritic edema it has been assumed that the damaged kidneys were unable to excrete these substances and that this was the cause of the retention. Accordingly, it has been customary to restrict sharply the water and sodium chloride intake in the treatment of this type of edema. But, *a priori*, the retention of body water and chlorides may be as easily explained by assuming that the body tissues hold them and that they were never presented to the kidneys for excretion. Obviously, it is important to determine which of these hypotheses is correct, since the treatment based on them is entirely different for each. Experiments were undertaken to determine whether nephritic edema is actually influenced by (a) fluid intake, (b) chloride intake, (c) total ash intake or (d) reaction of the ash. The patients tested had chronic nephritis with edema. The degree of edema was recorded in terms of body weights. Examples of the results obtained are demonstrated by charts. On the basis of his observations the author concludes that edema is not due to the failure of the kidneys to excrete water and is independent of the fluid intake. Edema is not due to the failure of the kidneys to excrete chlorides. Chloride as sodium chloride increases edema but as hydrochloric acid or ammonium chloride decreases edema. Appar-

ently, the reaction of the compound is more important than the chloride content as such. The reaction of the total ash intake is more important in influencing edema than the total amount of ash. Alkaline ash intake increases edema and acid ash intake decreases edema. In the treatment of nephritis edema, the author has used, during the past two years, a low protein, "salt poor" diet, with a neutral ash, to which are added acids or acid producing salts. The fluid intake has been "forced" rather than restricted. The clinical results have been very satisfactory.

INORGANIC SULPHATES IN SERUM IN EARLY RENAL INSUFFICIENCY

E. G. Wakefield, M. H. Power and Norman M. Keith, of Rochester, Minn. (*Journal A. M. A.*, Sept. 26, 1931), made a study of the significance of inorganic sulphates in the serum in early renal insufficiency by comparison with tests of renal function which are employed in the treatment of renal disease. They summarize their results as follows: (1) Inorganic sulphates in the serum are increased before there is retention of either urea or creatinine; (2) inorganic sulphates in the serum are increased usually before there is lowered excretion of phenolsulphonphthalein, and (3) in about half the subjects studied, sulphates were elevated in the serum before the kidney had lost its ability to concentrate urine to a specific gravity of 1.025 or more in the concentration test; also, the kidney might be unable to concentrate urine to 1.025 and the sulphates would be within the normal range of concentration. There was a fairly close agreement between the increased concentration of inorganic sulphates in the serum and the test of blood urea clearance as a measure of renal functional activity. From this study it is apparent that there may be definite renal disease and yet all the tests of renal function may be within the limits of the normal variations. The variations in the tests of renal function indicate that there are probably separate mechanisms of excretion of the various substances.

RELATIONSHIP OF DISORDERS OF DIGESTIVE TRACT TO ANEMIA

William B. Castle, Clark W. Heath, Maurice B. Strauss and Wilmot C. Townsend, Boston (*Journal A. M. A.*, Sept. 26, 1931), present a complete chain of evidence for the substantiation of the hypothesis that pernicious anemia is a deficiency disease resulting not from a direct inadequacy of the diet but from a conditioned deficiency produced by the failure of some function of the normal stomach to take place in the stomach of the patient with pernicious anemia. This reaction, in normal individuals has to do with the manipulation of protein and leads to the absorption of a factor necessary for the maintenance of normal bone marrow activity. In general, disturbances of the gastro-intestinal tract of various kinds may interfere with absorption or with processes necessary for the proper metabolism of food substances essential for the normal functioning of bone marrow. In this way, even in the presence of a normal

diet, disturbances of the digestive tract may condition a deficiency of nutrition, in particular of substances essential for blood formation.

TREATMENT WITH MALARIA AND ACQUIRED ANAPHYLACTOID REACTION TO QUININE: SUCCESSFUL USE OF QUINIDINE

Benign tertian malaria in a patient with acquired anaphylactoid reaction to quinine was successfully treated by J. P. Sanders, Caspiana, La. (*Journal A. M. A.*, Sept. 19, 1931), with quinidine, the dextrorotatory isomer of quinine, without discomfort to the patient. A positive skin test was obtained to quinine but not to its dextrorotatory isomer, quinidine. A son appeared to have inherited a form of quinine intolerance, as he suffered from urticaria on the one occasion when it was given, but he gave a negative skin test to quinine. The author states that quinidine sulphate, U. S. P., given in 10 grain (0.65 Gm.) doses once a day about two to four hours before the ordinary hour of the paroxysm, has given prompt and good results in a small series of patients with malaria. The results strengthen the suggestion of Dawson and Garbade that quinidine may well be given a trial in the treatment of malaria in cases of quinine intolerance.

Marriages

EGBERT H. FELL to Miss Florence Warner, both of Chicago, June 29.

JOHN P. SPRAGUE, Evanston, Ill., to Miss Sara Gregg Holiday of Burlington, Iowa, in Hackensack, Minn., September 12.

SIEGFRIED F. STRAUSS to Miss Marian Grunsfeld, both of Chicago, September 9.

Personals

Dr. Bernard Fantus has been appointed Professor of Therapeutics at the University of Illinois College of Medicine.

Dr. William B. Peck, Freeport, addressed the Stephenson County Medical Society, August 27, on "Current Events in European Medicine."

Dr. Frederick B. Moorehead, Chicago, addressed the Sangamon County Medical Society, September 3, on "Problems of Oral and Plastic Surgery."

A symposium on acute anterior poliomyelitis was conducted before the St. Clair County Medical Society, September 3, by Drs. Jean V. Cooke and John Albert Key, St. Louis.

Dr. Edward V. M. Mastin, St. Louis,

addressed the Adams County Medical Society, Quincy, September 14, on "Present-Day Status of Gallbladder Disease."

Dr. Frederick Tice was recently appointed president of the board of directors of the Municipal Tuberculosis Sanitarium, and Dr. Allan J. Hruby, secretary.

The Chicago Society of Hotel Physicians was recently formed, with Dr. Maurice W. Samuels as president and Dr. Joseph M. Blake as secretary.

Drs. John E. Kelley and Robert S. Berghoff, Chicago, addressed the Alexander County Medical Society, September 18, on "Forgotten Points in the Technic of Operation for Inguinal Hernia" and "Syphilis of the Heart," respectively.

The Logan County Medical Society held its first regular meeting at Lincoln, September 24. Dr. Francis E. Senear, Chicago, conducted a dermatologic clinic, and Drs. Harry M. Richter and Budd Clarke Corbus, Chicago, spoke on "Gastric and Duodenal Ulcers" and "Newer Ideas in Immunology," respectively.

The Chicago Council of Medical Women will be addressed, October 2, by Dr. Marian E. Farbar on "Correlating Some Recent Studies in Pathologic Anatomy with Symptoms in Known Brucella Intakes," and Sarah Van Hoosen Jones, "Undulant Fever from the Dairyman's Point of View." The council will be addressed, November 6, by Dr. Margarete M. H. Kunde on "Endocrine Influence on the Cyclic Changes of the Female Generative Tract."

News Notes

—Mrs. Anna Louise Raymond recently gave \$16,000 to the University of Chicago, the net income from which is to be used for two scholarships in the medical school to be known as the James Nelson Raymond Scholarships. The scholarships are to be awarded at the discretion of the president of the university to worthy students who are in need of financial assistance.

—The Louis A. Greensfelder Memorial Lectureship will be given, October 9, 8:30 p. m., at the Michael Reese Hospital. The program will be presented by Dr. Joseph Colt Bloodgood, Baltimore, on "The Cancer Problem"; Sir

George Lenthal Cheate, London, England, "Relation of Chronic Mastitis, Cysts and Papillomata to Cancer of the Breast," and Bowman C. Crowell, Chicago, "Cancer Clinic Problem." This lectureship will inaugurate the formal opening of the tumor clinic of the hospital.

—The highest suicide rate ever recorded in Illinois was established in 1930, when 100 more deaths than the previous high rate were noted, making a total of 1,382. The rate per hundred thousand of population was 18 against a previous high rate of 16.4. There were 1,085 suicides last year among men and 297 among women. Considering age, the greatest volume of increase took place among people in the age group 35-44, the number having been 33 per cent greater in 1930 than in 1929.

—The cancer clinic at Cook County Hospital is functioning under the following staffs: Drs. Henry Schmitz, gynecology; Karl A. Meyer and William Hendricks, surgery; Frederick Tice and Alexander A. Goldsmith, medicine; Harry B. Culver, genito-urinary diseases; George F. Suker, eye, ear, nose and throat; Chester H. Warfield, roentgenology, and Richard H. Jaffe, pathology.

—The curriculum for the school of nursing to be conducted at the Municipal Tuberculosis Sanitarium has been announced. The school, which has been divided into twenty-seven periods, will begin on or about October 15 and continue for three months. The work will begin with the history of tuberculosis, continue with study of the various stages, and conclude with instruction in home treatment.

—An experiment in air conditioning by filtration through cellulose filters is being conducted at the University of Illinois Research Hospital. The patients, who are all known to be pollen sensitive, spend their nights in a special ward supplied with filtered air under positive pressure. During the day, they are sent outdoors to be exposed to the pollen in the air. The purpose of the study is to determine the amount of relief obtained while in the ward and the effect of such relief on symptoms following exposure to air containing pollen. The hay-fever and asthma clinic of the University of Illinois College of Medicine, which is conducting the experiment under the direction of Drs.

Benjamin Z. Rappaport and Tell Nelson, accepts only destitute persons for treatment. The persons registered for the experiment are not receiving any medical treatment other than confinement to the ward.

—The White House Conference on Child Health and Protection to be held at the Palmer House, October 30-31, will have the following divisions: Medical service, headed by the Chicago Medical Society; public health service, Dr. Herman N. Bundesen, commissioner of health; education and training, Charles H. Judd, LL.D., director of the school of education, University of Chicago; child welfare, Miss Sophonisba P. Breckenridge, Samuel Deutsch professor of public welfare administration at the university, and community planning for child health and welfare, Wilfred S. Reynolds, director of the Chicago Council of Social Agencies. Many speakers of national importance will be on the program, including Dr. Ray Lyman Wilbur, secretary of the interior, Washington, D. C.

—The Charles Sumner Bacon Lectures (third series) will be given in Lecture Hall No. 221, at the University of Illinois College of Medicine, 1853 Polk Street, Chicago, by Dr. Herbert M. Evans, Professor of Anatomy, University of California, October 8 and 9. The general subject of the lectures is "The Function of the Anterior Hypophysis."

—The College of Medicine of the University of Illinois opens October 5. All departments are now housed in the magnificent new buildings located at 1853 Polk Street. These buildings are of the latest design and will accommodate 200 students in each class. The laboratories are contiguous with the Research and Educational Hospital which has a capacity of 500 beds. 360 of these beds are occupied at the present time and are used exclusively for research and teaching purposes.

In addition to the Research and Educational Hospital, the large State Department for Juvenile Research is closely affiliated with the College of Medicine and offers a wealth of material of psychological and neurological studies. A Psychiatric Institute with 62 beds and an Orthopedic Institute for children with 100 beds have also been opened. It has been necessary to limit the number of dispensary patients to 100,000 per year.

The Library and reading rooms have been enlarged to keep pace with the growth of the college. Reading rooms have a seating capacity of 500. The Library has over 40,000 volumes which includes complete files of practically all clinical and biological research journals.

—The Annual Conference of the Public Health Workers of Tennessee, Missouri and Kentucky met Friday, August 21, 1931, at the new Walnut Log Lodge on Reelfoot Lake, with a very interesting program.

The papers were all very good and the discussions were general and aroused much enthusiasm. There were a number of public health workers from Southern Illinois in attendance, so the society changed the name to "The Mississippi Valley Public Health Association," in order to include Illinois.

The following officers were elected for the ensuing year: President, Dr. J. P. Moon, Tiptonville, Tenn. Vice-Presidents: Dr. J. E. Reed, Benton, Illinois; Dr. Chas. Hunt, Clinton, Kentucky; Dr. F. L. Ogilvie, Carruthersville, Mo.

—Last spring there was organized in Chicago the Chicago Academy of Criminology. It is the object of this new scientific body to consider every phase of criminology and allied behavior problems. It will concern itself with the study of the causes and scientific diagnosis, prevention and management of delinquency, crime and mal-behavior. The principal activity of the Academy of Criminology will be the reading and discussion of scientific papers in monthly meetings, but it will attempt also to encourage the development of scientific work in criminology in other ways.

Already the best students and workers in this field in Chicago and its environs have joined the Academy. It is expected that the prestige and influence of the organization will rapidly increase in its power for good. Its main object is to put the field of criminology on the scientific and professional basis which it must have to insure more rapid progress along desirable lines.

At the first regular meeting held on May 14, 1931, the following officers were elected:

President—Edwin H. Sutherland, Prof. of Sociology, University of Chicago.

Vice-President—Ludvig Hektoen, Director,

John McCormick Institute for Infectious Diseases.

Vice-President—Paul L. Schroeder, State Criminologist of Illinois, and Director, Institute for Juvenile Research.

Vice-President—Arthur J. Todd, Prof. of Sociology, Northwestern University.

Secy. & Treas.—Meyer Solomon, Northwestern U. Med. School.

In addition to this, a Board of Directors was elected.

Deaths

FRED THORNTON BARRETT, Chicago; Medical Department of the University of Illinois, Chicago, 1906; aged 58; died, June 6, of coronary thrombosis.

JAMES HENRY BEATTY, Mascoutah, Ill.; St. Louis University School of Medicine, 1913; aged 65; died, April 20, of tuberculosis of the lungs.

GUSTAVE A. BERGLIN, Chicago; Chicago Medical School, 1921; on the staffs of the Lakeside and Jackson Park hospitals; aged 58; died suddenly, September 5, of chronic myocarditis, in his office, while talking with a patient.

MONROE SCARLET BLAZER, Manito, Ill.; Missouri Medical College, St. Louis, 1874; a former Fellow A. M. A.; aged 88; died, August 22, in St. Francis hospital, Peoria.

ARTHUR GUSTAVUS BOSLER, Chicago; University of Illinois College of Medicine, 1900; a Fellow, A. M. A., a well known pediatrician and professor of diseases of children at University of Illinois College of Medicine; active in medical organization and formerly secretary of Englewood branch Chicago Medical Society; a writer of both prose and poetry; aged 60; died, September 18, in Englewood hospital, of cerebral hemorrhage and hypertensive cardiac disease.

HENRY A. CHAPIN, Jacksonville, Ill.; Baltimore Medical College, 1895; past president of the Morgan County Medical Society; member of the Radiological Society of North America; on the staffs of the Passavant Hospital and the Jacksonville State Hospital; aged 59; died, August 10, in the Jewish Hospital, St. Louis, as a result of a tumor in the head of the pancreas and internal hemorrhages.

CHARLES E. COOK, Mendota, Ill.; Chicago Medical College, 1881; past president of the La Salle County Medical Society; aged 72; died, August 15, in the Harris Hospital, of complications following an operation for appendicitis.

GEORGE KNAPP FARRIS, Vienna, Ill.; St. Louis University School of Medicine, 1906; a member of Illinois State Medical Society; aged 52; died recently at Harrisburg, Ill., as the result of a motor car accident.

JOSEPH BENJAMIN GOLDBERG, Chicago; Rush Medical

College, 1902; a Fellow, A. M. A.; aged 52, died, September 25, of carcinoma of left bronchus.

THEODORE HUDSON, Marion, Ill.; University of Nashville, Medical Department, 1878; aged 81; died, September 2, of injuries resulting from being struck by an automobile.

CLARENCE WILBUR LEIGH, Constantine, Mich.; a major in the World War and city physician of Chicago from 1916 to 1920; a member of Illinois State Medical Society; formerly chief of staff of Cook County Tuberculosis hospital; aged 71; died, September 10, at Constantine, Mich., of cerebral hemorrhage.

CORNELIUS LARSEN LENARD, Chicago; University of Illinois College of Medicine, 1895; a former member of Illinois State Medical Society; aged 64; died, September 23, of coronary thrombosis and myocardial degeneration.

JOSEPH J. LUMPP, Chicago; Bennett Medical College, Chicago, 1901; aged 52; died, September 3, of pulmonary tuberculosis.

MILTON HOWARD MACK, Chicago; Medical College of Ohio, Cincinnati, 1892; at one time professor of gastro-intestinal diseases, Illinois Medical College; formerly on the staffs of the Jackson Park Hospital and the Frances Willard Hospital; aged 62; died, August 30, of cerebral hemorrhage and arteriosclerosis.

WILLIAM CALDWELL PERROW, Chicago; Chattanooga Medical College, 1909; aged 45; committed suicide with a razor, September 14, while despondent due to ill health.

EMMA PONZER, Chicago; University of Illinois College of Medicine, Chicago, 1926; member of the Illinois State Medical Society; on the staff of the Mary Thompson Hospital; aged 48; died, May 28, of pneumonia.

TIMOTHY CHARLES QUIGLEY, Chicago; College of Physicians and Surgeons, Chicago, 1908; aged 48; died, July 31, of carcinoma of the pancreas.

JOHN DILL ROBERTSON, Chicago; Bennett Medical College, 1896; head of the department of surgery and president of his alma mater from 1905 to 1915, when Loyola University assumed control of the school; health commissioner of Chicago, 1915-1922; president, Chicago Board of Education, 1923; president West Park Board, 1924-1930; member of the Illinois State Medical Society and the American Public Health Association; aged 60; died, August 20, in Fontana, Wis., of angina pectoris.

WILLIAM HARRAH WATSON, Chebanse, Ill.; Rush Medical College, 1875; veteran of the Civil War; aged 87; died, September 5, in Illinois Central Hospital, Chicago, following an operation for hypertrophy of the prostate.

SILVEY JENNINGS WILSON, Versailles, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; aged 79; died, July 21, of carcinoma.

FRANK WORDEN, Alton, Ill.; Washington University School of Medicine, 1876; aged 77; died, August 19.

GUY J. WORMLEY, Sandwich, Ill.; Rush Medical College, 1893; a member of Illinois State Medical Society; died, August 30, of uremia.

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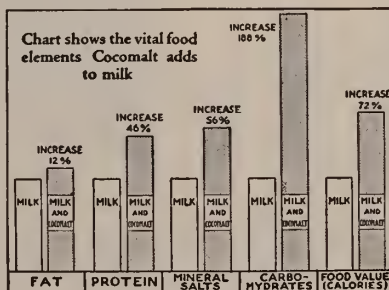
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Editorials

DIAGNOSE POLIOMYELITIS EARLY

Poliomyelitis is one of the most disturbing factors in modern medical practice. This acute, specific, infectious, febrile disease occurs both in sporadic and epidemic forms. Though mainly incident during the first few years of life, young adults are affected with comparative frequency; and mature years are not free from its invasions, though it is comparatively rare after middle life. It is a common malady enough, frequently unrecognized, with complete recovery unlikely once paralysis sets in, and yet one attack seems to confer immunity.

The virus was isolated in 1913 by Flexner and Noguchi. During the acute stage in living patients and also in the bodies of those who have died from the disease, detection of the micro-organism is facile. It has been found in both examinations of the secretions of the mucous membranes of the mouth, the nose and the upper air passages as well as in the intestines. As it is proved beyond doubt that the virus is present in or on the nasal, buccal and respiratory mucous membranes and that it may be spread therefrom, importance is indicated for attention to isolation of the patient, the bed and the utensils and of adequate sterilization. Mild antiseptics should be employed for daily disinfection of the patient's mouth and nose.

A distressing angle of poliomyelitis is that in patients suffering from what might be termed the abortive form of the disease the presence of the virus has been demonstrated as well as in *contacts apparently healthy and who doubtless serve as carriers of the virus.*

Of poliomyelitis it may be written accurately that here is an evil that must be stopped before it has begun. Curative or even remedial treatment is held to be of small avail. Injection of the serum should be done prior to the onset of paralysis—in fact at the moment of recognition, and at least during the first twenty-four hours of the attack. If delayed longer than that the value

is nil. Next to recognition and serum injection the important point in curative action—preventive action really—is the ability for physicians to lay their hands on a sufficient supply of the serum. It has been proved that this serum that must be made from the blood of those recently convalescent can be made and stored so that its therapeutic efficiency can be kept over a period of three years. This human immune serum can be made by animal inoculation. For storage purposes it must be set away at an ice box temperature.

So excessive is the amount of bronchial secretions apt to be in acute poliomyelitis, that it has been pointed out that in the severe bulbar types of poliomyelitis death occurs as frequently from the patient drowning in retained secretions as from paralysis. Hence postural treatment is advocated—that is, nursing the patient with the head lowered.

Once the disease has developed about all that can be done for the patient is to stop it from reaching the paralytic stage.

ILLINOIS HEALTHIEST BIG STATE

According to the State Director of Health, Illinois is the healthiest of any of the big states. We quote from a summary of health condition in Illinois for the year 1930:

Among states with a 1930 population of over 5,000,000, Illinois experienced the lowest death rate reported last year. The states of California, Illinois, New York, Ohio, Pennsylvania and Texas are included in this group but the mortality statistics in Texas are so incomplete that the state is not in the U. S. death registration area and death rates are therefore not computed by the federal government for Texas. The death rate per 1,000 population in Illinois last year was 10.9. No other state in this group had a rate under 11.0 per 1,000 population. Pennsylvania stood second with a rate of 11.3 and Ohio third, with a rate of 11.4. Had the Pennsylvania rate prevailed in Illinois, the number of deaths would have been 3,060 greater than it was. Instead of 83,592 deaths, there would have been 86,652.

If the Ohio rate had prevailed in Illinois the number of deaths in 1930 would have been greater by 3,825 than it was. Had the Cali-

fornia rate prevailed 5,355 more people would have died and had the New York rate prevailed 6,120 more people would have died in Illinois during 1930 than was actually the case. The death rates per 1,000 population for 1930 in states of more than 5,000,000 people were as follows:

Deaths Per 1,000 People, 1930

Illinois	10.9
Pennsylvania	11.3
California	11.6
New York	11.7

Illinois also enjoyed favorable health conditions last year in comparison with close neighboring states. Iowa and Michigan had somewhat lower rates but Indiana, Kentucky, Missouri and Wisconsin had rates distinctly higher than that of Illinois.

The 1930 death rates per 1,000 population in these states were as follows:

Deaths Per 1,000 People, 1930

Iowa	10.5
Michigan	10.6
Illinois	10.9
Kentucky	11.3
Wisconsin	11.3
Missouri	11.8
Indiana	12.1

Had the rate for Iowa or for Michigan prevailed in Illinois there would have been 3,060 or 2,295 fewer deaths, respectively, than actually occurred. Had the Kentucky, Wisconsin, Missouri or Indiana rate prevailed there would have occurred 3,060, 3,060, 6,885, or 9,180 more deaths respectively, than actually occurred.

These comparisons indicate that the people of Illinois enjoy health conditions superior to those that prevail in most states comparable in size and population. They show that in comparison with close neighbors Illinois enjoys favorable health conditions.

The general death rate in Illinois last year was the lowest ever recorded for the State since reliable statistics have been compiled. More significant still the death rate from tuberculosis and the infant death rate was the lowest on record. The rate from diphtheria for the State outside Chicago dropped to a new low level. Only 134 deaths from diphtheria occurred in the State outside Chicago giving that portion of the population a rate of 3.1 per 100,000 against a

rate of 4.1 for 1925, the previously lowest rate on record.

These observations indicate that the prevailing favorable health conditions have resulted in large part from the activities of an alert and competent medical profession and state and local health departments and from the demands of an intelligent and well informed public.

HOSPITALS NOT RESPONSIBLE FOR THE HIGH COST OF SICKNESS HOSPITAL CARE NEVER INCREASED IN COST IN PROPORTION TO OTHER NECESSITIES OF LIVING

A roar and cry is heard on many sides that there have been no reductions in hospital costs despite the fact that foodstuffs and wearing apparel have dropped in the past year, and that while labor has not lowered its wage that millions of men and women are without work.

While it is true that the high cost of hospitalization lies at the door of the overhead rather than at the skill of its scientific workmen, yet as hospital care never increased in proportion to the increases in other necessities of living, it is at once a difficult and yet a facile task to explain this lack of reduction.

Maintenance of a hospital is a heavy burden in many places other than the pantry and the linen closet. Labor has not cut its price but there is scarcely a public institution from universities or museums to less hotels de Dieu, that more or less depend upon endowment and favor to make both ends even partially meet that has not faced withdrawal or depreciation of donations from men, women, and even trust funds that were "caught" in the "crash."

To go a little farther into the economic woes of the land, townships, villages, counties and cities are in many instances bankrupt. Yet the hospital service must continue at par. Sickness and nature know no detour of their ways. One of Chicago's prominent obstetricians made this complaint to me the other day, "I have never done more work in twenty years of practice nor had less pay. It seems that the only thing idle men and women can increase is the birthrate."

The hospital and the doctor have been running close to the edge ever since the war shot up living costs to sky high limits. And here are a few citations to prove it.

"Are modern hospital rates excessive? The bureau of statistics of the labor department at Washington in a survey of hospital conditions in the United States reached the conclusion that the cost of getting well has not risen in proportion to other living costs.

"Maintenance expense of four representative Chicago hospitals was taken as a basis of comparison with the rates charged the public. The average cost to the hospital per day per patient was \$2.83 in 1913 and \$6.65 in 1926. Yet the average charge for a ward bed only doubled—being advanced from \$2.00 to \$4.00. Increase for private rooms was only 33 per cent. The average price increase to the public for all hospital accommodations was but 66 per cent., as compared with increased maintenance costs of 135 per cent. A similar investigation among representative Pennsylvania hospitals showed that the charges to the patient had grown by 88 per cent. since the days before the war, while the institutions themselves were facing budgets 123 per cent. greater.

"Efficiency in hospital management has cut short the stay of the average patient by three days, or from fifteen days in 1916 to twelve days in 1926, thus balancing the average cost of illness. A patient secures at practically no greater expenditure, the same accommodations he enjoyed a few years ago during a much longer period of convalescence.

"While the hospitals have been raising their rates considerably less than 100 per cent., educational costs have risen by 207 per cent. since 1916, the appropriations in cities for health and sanitation have been advanced 156 per cent. and the budgets of charity organizations are 114 per cent. greater than ten years ago.

"The hospital faces a dual problem. It is a semipublic institution, with a certain obligation toward the community. This it strives to meet by an immense amount of charity work and often by adjusting its rates to fit the patient's pocket-book. At the same time the hospital should pay its way. The public's duty is to cooperate in recognizing sickness costs as legitimate items of household expense and by providing an emergency fund with which to meet them. The appropriation for sickness in the average family should be \$100 a year, the federal survey shows."

"Yet in how many families is that appropriation made? And in how many families would

an accurate census show but that this amount twice and thrice over had been appropriated for such luxuries as automobiles, fur coats, radios, and expensive furnishings.

"Needs must when the devil drives" is the motto in far too many a home, with the physician the complacent goat, and his side partner, the hospital, only slightly better off."

DR. FERGUSON IS RECOVERING

Dr. Ralph R. Ferguson, president of the Illinois State Medical Society, is recovering from a long siege of severe illness. This is undoubtedly one of the most welcome Thanksgiving greetings that we can give doctors throughout the state.

President Ferguson was unable to attend the state meeting in May at East St. Louis, as at the time he had undergone a major surgical operation. Unfortunately he was obliged to undergo a second operation in October.

From this second ordeal Dr. Ferguson is rapidly recovering, and we have every reason to believe that in the course of a few months Dr. Ferguson will be restored to health and returned to his normal activities.

ROCK ISLAND COUNTY MEDICAL SOCIETY HONORS PIONEER PHYSICIANS. MEDICAL HEROES OF A HUNDRED YEARS AGO RECEIVE MERITED TRIBUTE

Not taps but reveille has sounded anew to the memory of two distinguished pioneer physicians whose mortal services ended a century ago.

As a tribute to Dr. John Gale, U. S. A., and Dr. Richard Coleman, U. S. A., who are buried at what was once Fort Armstrong, but is known now as the Rock Island (Ill.) Arsenal grounds, the Rock Island County Medical society on Oct. 20 unveiled a memorial tablet.

The tablet is placed on a native boulder near the graves of the two physicians, slightly south of the clock tower.

Inscribed on the tablet is—

"John Gale, surgeon United States Army, born in New Hampshire, 1790, died at Ft. Armstrong, Rock Island, Ill., July 27, 1830; Richard M. Coleman, assistant surgeon, United States Army, born in Kentucky, died at Ft. Armstrong, Rock Island, Ill., Sept. 2, 1832.

"These men served with distinction at many

frontier posts as surgeons of Col. Henry Atkinson's expedition to the mouth of the Yellowstone in 1825 and performed medical service.

"To the memory of these pioneer physicians this tablet marking their last resting place is erected by the Rock Island County Medical society, A. D. 1931."

The memorial was unveiled at 5 p. m. by Dr. W. H. Myers, president of the Rock Island County Medical society and accepted by Col. D. M. King, commanding officer of the Rock Island arsenal. Dr. Stuart W. Adler spoke at the unveiling. For the banquet at 7 p. m. Dr. Myers in presiding made the introductory remarks. Dr. Joseph De Silva was toastmaster. Dr. F. E. Bol-laert sang. John H. Hauberg, vice-president of the Illinois Historical society, discussed the U. S. Army surgeons at Fort Armstrong. The address of the evening, "Drs. John Gale and Richard Coleman," was ably given by Dr. Irving S. Cutter, dean of the Northwestern University Medical school and historian of the Illinois State Medical Society.

Officers of the Rock Island County Medical Society are: President, Dr. Myers; vice-presidents, C. H. Anderson and C. J. F. Rochow; secretary, W. F. Schroeder; treasurer, C. C. Ellis, and medical legal advisor, A. T. Leipold. Flowers for the occasion were secured from the Watertown Hospital florists by Mrs. C. H. Anderson, president of the Women's auxiliary of the Rock Island County Medical society, while the color bearers, color guard and bugler came from the 33rd ordinance company, Rock Island Arsenal.

Quoting from the orators of the evening, it is well to note that in part, Dr. Cutter said:

"It is significant that the Rock Island County Medical society should honor the memory of these two men, who played a conspicuous part in the development of the great west. John Gale is first mentioned in army records for distinguished service at the battle of Lake Erie during the War of 1812. There he rescued the wounded and ministered to their needs at the risk of his own life.

"Next he was at Ft. Selby, Detroit, Mich., with the 3rd United States infantry. Subsequently he commanded a detachment that went to Ft. Dearborn at Chicago. It was reported that not a single soldier died on the march nor

was there any illness of any consequence among members of the detachment for two years.

"Eventually he was ordered to join Colonel Henry Atkinson's expedition to the mouth of the Yellowstone. Dr. Coleman was also a member of this party. The expedition left in the spring of 1819 and arrived at Council Bluffs, Iowa, by October of the same year. A cantonment was built in the lowlands instead of upon a healthful cliff and during the fall and winter 159 of the 700 soldiers died of scurvy. Except for the superhuman efforts of Drs. Gale and Samuel G. Mower many would have died.

"Sergeant John Gale was more than an army physician. He was a trusted lieutenant. He was often sent on important missions and on each occasion was complimented on the results of his expedition and report. He signed most of the treaties made by the Indians at Ft. Atkinson.

"He helped to establish Ft. Leavenworth and in 1828 the troops were removed because of disease. Dr. Gale reported the fort was advantageous as an army post and the troops were ordered to reoccupy it on his recommendations.

"John Gale was a versatile character. He is frequently mentioned in history as a peace-maker."

"Dr. Gale was married in 1822 to an Indian maiden. Forced to abandon his wife and daughter when the squaw refused to accompany him when he was transferred to Ft. Leavenworth in 1827, he made provisions for their future before his departure.

"The daughter married and Dr. Gale's granddaughters and grandson rose to distinction. One granddaughter became a doctor and the other helped Indians at Omaha, Neb., after she had been educated in the United States and abroad. The grandson, Francis La Flesche, is listed in "Who's Who in America," as an eminent ethnologist.

"Dr. Gale was sent up the Mississippi river from Jefferson barracks to negotiate treaties with Indians north of Ft. Armstrong. This was in 1830. Twelve days before he died he signed a treaty with Indians up the river. He returned to Ft. Armstrong, became ill, and died July 27, 1830.

"History is not generous in recording the deeds of Dr. Coleman. He nevertheless was an

outstanding figure among the isolated surgeons of the frontier army. Dr. Coleman's fortitude was unparalleled. Dr. Coleman was a surgeon at Ft. Crawford. Prairie du Chien, Wis., when he was ordered to Fort Armstrong in 1832 after the Black Hawk war. Cholera was raging here and he died Sept. 2, 1832, of the disease about two weeks after arriving at Ft. Armstrong. Dr. Coleman rendered much of his meritorious service on Colonel Atkinson's expedition to the Yellowstone."

FORT ARMSTRONG HISTORY

Mr. Hauberg gave an historical account of Fort Armstrong and the blockhouse which has been reproduced on the Rock Island arsenal. He enumerated other historical sites on the arsenal which have been marked and gave Dr. Cutter credit for the movement to honor the two pioneer army surgeons.

"Ft. Armstrong," Mr. Hanberg said, "was named in honor of the secretary of war in 1818. It was then headquarters for soldiers, the Indian agent, interpreter, traders and army surgeons.

"The characters closely identified with the history of this community, included Antoine, Le-Claire, Colonel George Davenport, Russell Farnham and Major Thomas Forsythe. Among the early army physicians were Drs. Thomas Lawson, John Emmerson, C. A. Finley, Samuel B. Smith, Samuel C. Mower, John Gale and Richard M. Coleman.

Drs. Gale and Coleman were presumably interred in the old arsenal burial plot. Part of it lies beneath the elevation for the tracks of the Rock Island Lines across the arsenal. Much of the cemetery was graded away to provide the elevation for the railroad tracks but the boulder on which the tablet has been placed was uncovered during the excavation and has remained undisturbed in its original resting place."

HOW HEALTH INSURANCE AFFECTS GERMAN DENTISTS

The committee on the study of dental practice of the American College of Dentists have presented highly illuminating data on the menacing effect of insurance on dental service in Germany.

The findings of the committee on the study of dental practice confirm the numerous reports and statements that have been made for over a

period of twenty years by Dr. Ochsner and numerous other medical men and economists both in America and elsewhere to the effect that as a result of the adoption of compulsory health insurance forty-five or fifty years ago the German people are now receiving the worst sort of medical and surgical service imaginable; we quote from the committee's report:

Germany was the first nation to install health insurance. Now after almost half a century of experience it is, in spite of the many changes that have taken place, possible to pass judgment on nearly all its results.

The fact that German dentistry was from the beginning divided among two classes of practitioners has deeply influenced the relations of both insurance and dentistry. The *Zahnärzten* are physicians who have specialized in dentistry. Alongside this class there grew up a constantly increasing number of dental technicians. As prosthetic dentistry grew in importance as compared with dental surgery these came to take over more and more of the dental field, especially among the insured.

When insurance was established there was practically no prosthetic dentistry, at least among the working class. There were thus three lines of progressive increase; first, number of insured; second, relative importance of prosthetic dentistry; and third, largely as a result of the other two, in the number of dental technicians and consequent scope of their work.

Insurance societies seek the cheapest service that will be satisfactory to their members. In the beginning, at least, the dental technicians charged less than the dental surgeons. In many cases insurance physicians prescribed and directed the work of dental technicians.

Soon the latter began to develop their own special professional skill, standards, educational institutions, and organizations. At the present time they have obtained official recognition for the graduates of their dental institutions, which they claim are modeled on the dental schools of the United States. They have assumed the name of "dentists" in spite of strenuous protest from the *Zahnärzten*. They now largely dominate the great insurance practice.

Unfortunately the insurance societies were able to play upon the antagonism of these two branches and thereby drive the rewards for in-

surance dental work down almost to the starvation point. At first the *Zahnärzten* were not so greatly affected because dentistry was still a luxury profession, but when insurance brought so large a section of the population, hitherto almost without dental care, within its scope, it dominated dental service.

When the two divisions of the dental profession tried to cooperate against the insurance societies, the latter established great clinics. It is complained that in many cases excessive sums were invested in the building and equipment of such clinics largely for advertising purposes. These clinics were staffed by whichever section of the profession would be hired most cheaply. Usually both branches were utilized, but the number of "dentists" so employed was much the larger.

The political and social power of the societies and the weakness and unpreparedness of dental organizations prevented the profession from maintaining control of clinics. These are, therefore, operated almost entirely in the interest of the societies with a disregard for professional interests. Once established they did not confine themselves to insurance patients, but entered upon general practice on a strictly commercial basis. They even invaded the "luxury" practice and supplied private patients with expensive dentures of precious metals such as are forbidden in insurance practice. In short, the course of evolution, political conditions, weakness of preparation and divided organization have all combined to bring upon the German dental profession the very worst efforts of the insurance system.

SPAN OF LIFE HAS NOT INCREASED— MISLEADING PROPAGANDA TO THAT EFFECT HAS GROWN APACE

Modern civilization foreshortens the span of life. We are really less clever than we think. This abridgement of life expectation after forty-five, is the price of what we call success. Rapid increase of degenerative diseases stands out as an incidental phenomenon of American life rather than of American individuals. Degenerative diseases are rampant in the United States.

Inherent responsibility for this prevalence of degenerative diseases is intertwined with the tension under which American citizens live and this

intensity is reflected in communal life throughout the nation.

Authoritative statistics confirm this contention in the face of fallacious statements appearing in lay magazines, or used otherwise as propaganda for various purposes, or published in some public health journals, or given out indiscriminately by well-meaning but misguided statisticians. Erroneous compilations and conjectures breed in the minds of the general public a feeling of false security.

This adverse development of the range and extent of degenerative diseases might be accepted as a mere human rotation were it not that the tension from which these troubles spring is engendered by the common striving for wealth, power and material aggrandizement and often the results of its attainment. Through the creation of the false standards arising from such conceptions of life, the great American public has deprived itself of peace and leisure and has lost the art of living wisely.

After all may there not be a possibility that as a nation as well as individuals we pay too dearly for our material success, or modern Mammon worship?

The average American is convinced beyond argument that the civilization he has created in his native land is of a beauty and intrinsic value so unique that it is absolutely priceless. This is admirable from a standpoint of loyalty and nationalism. There might be nothing wrong if it did not rob us of the knowledge of the superiority of a civilization that puts health first and wealth, second.

Take living conditions elsewhere. In Europe for example, men who accumulate enough to maintain a comfortable living retire to a life of comparative leisure, though probably not of extreme luxury. In other words the average European knows when he has had enough. He is willing to take his labor as he does his liquor—in moderation.

The bulk of America's rich men never lose the itch to become richer. A man who has acquired a modest competence never thinks of quitting but only of working harder. He will work hard, but he will gamble with his savings with the idea ever in mind that if he could make one dollar out of a dime, that he should not stop

until he had made first tens and then hundreds more out of his modest capital.

Opportunities ever at hand in America are conducive to whetting the gambling instinct in every man. Legitimate chances for wealth surround us. Is it surprising then, that a man who has made a small fortune on a small gamble should hesitate to take to heart the adage

"He either fears his fate too much

Or his desert is small

Who dares not put it to the touch

To win or lose it all."

If the venture comes out successfully, well and good. He takes his profits and goes on to another gamble. To be sure the strain may have shortened his life, or have crippled and aged him prematurely. But does he reckon of this? No! And if the gamble has turned out unsuccessfully—the statistics on American suicides answer that. Every year the group increases of those who kill themselves because they can not cover their material obligations. The last gamble has had failure, disgrace, death itself holding the stakes.

Certain publicists, magazine writers and health statisticians contend that notwithstanding the complex, racking method of modern existence that the span of life has been greatly lengthened in the past fifty years. Since 1880 so they say this span has been lengthened nearly fifteen years.

On the surface this might seem to be truthfully said. Analysis of relevant figures discloses that what appears to be an apparent prolongation of life at the age of 56 has been a saving at the other end of the line. In other words this is not a lengthening of adult life but a saving of child life.

The majority of people fail to distinguish between the span of life of the human race and the average age at death of individuals.

The expectation of life rather than the length of life is the utmost that the science of sanitation and public health work has been able to achieve.

Unfortunately the tremendous advances made in this direction have misled many over optimistic enthusiasts, into the belief that man has found methods for prolonging the span of life, of the race, and has added to its longevity.

Science has been able to achieve a greater expectation of life but not a prolongation of life.

Perhaps science might have achieved something in the way of prolongation of the span of life, if the individual himself, as an individual and as a nation, would lend a hand. Life expectation has increased because not only can contagion be prevented but infants and children can be made to observe rules of hygiene. The American adult on the other hand, takes the keenest pleasure in living so as to break all hygienic tenets.

For example, rest is an almost unknown factor in American life. Overeating is an almost universal condition. Coupled to which indulgence in impure alcoholics and excesses of the boudoir show a shameful percentage. The "wild party" with its "wild women" has become an everyday affair.

Right there is a common causative factor for the increase, steady, insidious and terrible of degenerative diseases.

Nowadays more persons live to maturity before death overtakes them, than in years previously. The average age of life is increased from 32 to 56. So that the average life of individuals is greater but the span of life at best remains stationary, and in all probability has decreased.

Improved sanitation and greater care has reduced infant mortality. A greater number of infants grow up to die at maturity. The number of adult deaths has increased. But the age of adult deaths, or the span of life has not done so. There are no greater numbers of centenarians or of "grand old men" than there were in former years in proportion to the population.

Expectation of life indicates that average age to which people may expect to live. The average age at death is analogous in its scope. The span of life indicates the maximum number of years that man may live, as a mortal being.

This distinction must be reckoned with before accurate statements and comparisons can be made. It is too often disregarded because misunderstood.

Figures upon which optimistic statements are based result from the remarkable diminution of deaths during infancy and childhood. Elimination of preventable ills such as immunization against smallpox, diphtheria, typhoid fever, general hygiene's higher standards and better supervision of food and water supplies, and sewage disposal operate to make more men live longer, but do not lengthen the measure of life.

Nor has anything happened to encourage the hope that the span of life may be lengthened.

Marked decrease in preventable disease due to a lessening of contagion and diseases due to malnutrition in infancy and childhood, has been effected. But there has been a marked increase in what is known as the degenerative diseases appearing after middle life such as heart disease, diseases of the arteries and circulatory system, cancer, Bright's disease. Obviously, therefore, the span of life has not been prolonged and life still has its natural limitations.

In the majority of cases it is "the pace that kills" that gives a black eye to any possibility of increasing the span of life for the average American. As a matter of fact a man should be of the greatest service to humanity in those two decades that follow his sixtieth birthday.

The exception that was Edison should be the rule. When a few weeks ago Edison died at 84 in full possession of all his mental faculties still hard at work and intent upon seeking a substitute for rubber, the English speaking world regarded him as a genius of longevity as well as a masterman of science. George Bernard Shaw at 75 still in the front ranks of his art is regarded with awe, and by the younger men, almost as a visitor from beyond. Yet these men like Nordau, Gladstone and Justice Holmes of the United States Supreme Court are really only in the fullness of years and the ripeness of life. Edison, Shaw, Nordau and Gladstone labored more indefatigably than does the average American business man who is run down at sixty and whose maximum power approximates 40 years of age, when as a matter of scientific computation he should at seventy years be in the zenith of his intellectual, moral and spiritual best. As it is men wither on the branch, twenty years too soon. For this premature aging, the gait of modern life is responsible. It takes a man out of his natural stride.

Civilization affords men today a forced, hot-house training. There is early flowering, early withering away. Self-engendered, and self-nurtured is this nerve strain and not all the resources of medical science can bring about its relaxation. Few men serve out three score years and ten without some enfeeblement of their physical and intellectual powers.

In leisurely times, steeped in quietude when

Robert Browning brought to life his Rabbi Ben Ezra, there lingered the philosophy,

"Grow old along with me,
The best is yet to be
The last of life
For which the first was made."

But now, the last is almost gone before the first is ended. No longer do we burn the candle at both ends. We have speeded up even more than that. We have cast out the candles. Life has become an incandescent, flushed with the voltage that blows its fuses far too soon. We do not hearken even to St. Vincent Millay's plea for the pretty candle, "It gives a lovely light." We must, we do, explode, betimes.

DOCTORS DESIRING TO PRESENT PAPERS BEFORE THE 1932 MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY

Take Notice

SECTION ON PUBLIC HEALTH AND HYGIENE

All persons desiring to preface and read papers before the section on Public Health and Hygiene of the Illinois State Medical Society to be held at Springfield in 1932 should communicate with the chairman of the section, Doctor Arlington Ailes, LaSalle or Doctor Arnold Kegel, Chicago.

SECTION OF RADIOLOGY

Doctors wishing to present papers before the State Society meeting to be held at Springfield, May 17, 18, 19, 1932, kindly communicate with Dr. E. L. Jenkinson, Chairman, Chicago and Dr. P. B. Goodwin, Secretary, Peoria.

SECTION ON MEDICINE

It is desired by the officers of the Medical Section that any members desiring to present papers at the Springfield session notify *both* the Chairman and Secretary at the earliest possible date. Chairman, Dr. Warren Pearce, Quincy and Secretary, Dr. W. H. Nadler, 8 South Michigan Avenue, Chicago.

SECTION OF EYE, EAR, NOSE AND THROAT

Any member wishing to present a paper at the Eye and Ear Section meeting at Springfield, May 17 and 18, will please communicate immediately with Dr. Frank Novak, Jr., Secretary, 30 North Michigan Avenue, Chicago.

COURSE OF OXYGEN THERAPY AT MICHAEL REESE HOSPITAL

Michael Reese Hospital is offering a four-day course of oxygen therapy, November 17-20.

The course will be given by members of the clinical and laboratory staffs of the Michael Reese Hospital. The principles and application of oxygen therapy will be presented and will include discussion of different types of resuscitation apparatus including the adult and infant sized Drinker machine and also the use of carbon dioxide oxygen mixtures in various conditions.

There will be an exhibition by various manufacturers of the most important types of oxygen therapy and resuscitation apparatus which are at present available. This exhibition will include a portable oxygen room which can be set up in a private home in an hour. Demonstration of these various types of apparatus and instruction in their use will be given.

EDUCATIONAL COMMITTEE GIVES SERVICE DURING

SEPTEMBER AND OCTOBER, 1931

SPEAKERS BUREAU:

60—Lay meetings addressed by members of the Illinois State Medical Society.

Woman's Civic Club.

State Association Y. M. C. A. Health Directors.

Lions Clubs.

Parent Teacher Associations.

Mothers' Clubs.

High School Assemblies.

Nurses Alumni Associations.

County Teachers Institutes.

Kiwanis Clubs.

Federation of Women's Clubs (County).

Home Bureaus.

Rotary Clubs.

Club Y. M. C. A. College.

Woman's Auxiliary.

SCIENTIFIC MEETINGS:

Decatur Medical Society—W. K. Lasher, "Medical Economics".

Will Grundy County—Film, "Infections of the Hand".

Staff Paris Hospital—Robert W. Keeton.

Sangamon County—Frederick B. Moorehead, "Problems of Oral and Plastic Surgery".

Rock Island County—Carey Culbertson, "Gynecology".

Union County—E. J. Weber.

Will Grundy County—Frank F. Maple, "Obstetrics".

Jackson County—Jean McArthur, "Education by the Medical Society".

Jackson County—James T. Gregory, "Acute Appendicitis".

Alexander County—Robert S. Berghoff, "Syphilis of the Heart".

McHenry County—Edwin W. Hirsch, "Treatment of Chronic Gonorrhea".

Alexander County—J. E. Kelley, "Some Forgotten Points in the Technique of Operation for Inguinal Hernia".

Coles—Cumberland County—Hugo W. Traub, "Immunization".

Iroquois County—Dudley T. Dawson, "Mental Hygiene".

Perry County—N. C. Iknayan, "Renal Insufficiency".

Will Grundy County—Richard H. Jaffe, "Pathology of Pulmonary T. B.".

Monmouth Medical Club—Charles P. Blair, "Injuries to the Spine".

Winnebago County—Andy Hall.

Peoria City Medical Society—Francis Eugene Senear, "Modern Conceptions Concerning the Treatment of Syphilis".

Will Grundy—Charles M. McKenna, "Renal Tuberculosis".

Fulton County—A. C. Ivy, "Studies on the Etiology of Gall Stones".

Iowa—Illinois Central District Society—George de Tarnowsky, "Treatment of Low Back Pain".

Paris Hospital Staff—Robert S. Berghoff, "Syphilis of the Heart".

Will Grundy County—Clarence L. Wheaton, "Lobar Pneumonia".

Jackson County—Herman H. Cole, "Heart".

Tri-County Society—George H. Marquardt, "Vascular Pains and Vascular Edema of the Legs, Their Diagnosis and Treatment".

Tri-County Society—Harold O. Jones, "Gynecology".

Tri-County Society—Lowell D. Snorf, "Treatment of Peptic Ulcer and Its Complications".

Will-Grundy County—Channing W. Barrett,

"Diagnosis and Treatment of Extra-Uterine Pregnancy".

Pike County—Dudley T. Dawson, "The Responsibility of the Psychiatrist in His Community".

LaSalle County—James H. Hutton, "Recent Advances in Endocrinology".

LaSalle County—Miss Jean McArthur, "A Medical Society's Responsibility for Health Education".

LaSalle County—W. K. Lasher, "The Business Side of Medicine".

Will Grundy County—A. James Larkin, "Radium in General Practice".

RADIO:

35—Regular broadcasts from stations WJJD, Monday, Wednesday and Friday noons at 1:00 o'clock and from WGN every Tuesday at 11:50 o'clock.

53—Talks during Young Mothers' Hour from WJJD in cooperation with the Chicago Pediatric Society.

REGULAR BROADCASTS

Jay Ireland—"Appendicitis in Children."

Frank E. Nagel, Jr.—"Infantile Paralysis."

Robert Blue—"The Eye as a Factor in Health and Efficiency."

Alfons R. Bacon—"Obstetrics."

Frederick B. Balmer—"Menaces to Health."

Cyril Hale—"The Disease of Mystery—Dementia Praecox."

John S. Ashby—"What Is Indigestion?"

A. H. Hallman—"Diabetes."

W. W. Dalitsch—"Focal Infections."

S. G. Plice—"High Blood Pressure."

Clarence Naymann—"The Relation of Extroversion and Introversion to Insanity."

G. K. Fenn—"Angina Pectoris."

Alfred H. Hallman—"Diabetes."

Alfred N. Murray—"Preventable Injuries to the Eye."

L. C. Morris—"Periodic Health Conferences."

Benjamin Goldberg—"Early Recognition of Tuberculosis."

Alexander S. Hershfield—"Mind Health."

Meyer Solomon—"What Is a Nervous Breakdown."

Edward Howland—"How to Grow Old Slowly."

Harry E. L. Timm—"Early Signs and Symptoms of Common Diseases That Become Dangerous."

C. L. Birch—"Hemophilia."

Walter R. Fischer—"Growing Feet."

Harry A. Oberhelman—"The Commoner Skin Infections."

H. M. Leaf—"A Few Causes of Common Abdominal Complaints."

Edward A. Roling—"The Care of Eyes During Childhood."

Carl T. Stephan—"So You Are Going to Have a Baby."

J. R. Ballinger—"Mental Mechanisms of Fear."

S. C. Robinson—"Let Well Enough Alone."

Loren W. Avery—"Migraine."

Andrew W. McNally—"Social Disease."

Charles E. Franklin—"Common Colds."

PRESS SERVICE:

1.423—Releases.

804—Regular Press Service.

54—Monthly Service.

19—Newspapers, re meeting Alexander County Medical Society.

45—Newspapers, re meeting Bureau County Medical Society.

60—Newspapers, re meeting Fulton County, Medical Society.

68—Newspapers, re meeting LaSalle County Medical Society.

41—Newspapers, re meeting Perry County Medical Society.

117—Newspapers, re meeting Tri County Medical Society.

115—Newspapers, re meeting Southern Illinois Medical Association.

20—Newspapers southern part of state about "Appendicitis".

16—Newspapers Ford County about "Diphtheria".

8—Newspapers Henry County about "Infantile Paralysis".

48—Newspapers re branch meetings Chicago Medical Society.

2—Chicago Association of Commerce, re meetings Chicago Medical Society and Scientific Societies.

6—Chicago Rock Island Magazine.

13—Health Articles written and approved by Committee:

No Place Like Home—For Accidents.

Child's Right to Health, The.

Mind Health.

The Diabetic Patient.

Damage Caused by Infantile Paralysis. Warts.

How to Grow Old Slowly.

Preventable Injuries of the Eye.

Eating Habits of Children.

A Baffling Skin Disease.

Hemophilia or Bleeders Disease.

Arthritis.

Middle Age.

MISCELLANEOUS:

For the third consecutive year the Educational Committee has been invited to schedule speakers to present a series of talks to the members of the Pre-Medical Pre-Dental Club of the Central Y. M. C. A. College, Chicago.

Request for copies of health talks from the New York State Tuberculosis Committee.

Special diphtheria immunization program and material for Naperville.

Material supplied to physician's wife who edits a local P. T. A. publication. Health column in this bulletin will be credited to Educational Committee.

Mimeographed notice for two meetings of the Woman's Auxiliary of the Chicago Medical Society.

Study outlines and material to Parent Teacher Association.

Material on "Movies and Child Health" for Quincy Parent Teacher Association.

Article appeared in the October, 1931, American Journal of Public Health, telling of work carried on by the Illinois State Medical Society through the Educational Committee.

Request from Lake County Society, Indiana, for information about Educational Program to serve as a pattern for Indiana.

The Educational Committee had an exhibit at the White House Conference on Child Health and Protection, Chicago Region, at the Palmer House, October 30 and 31. The exhibit showed the work which the medical profession is doing in child and parent education.

Special material sent to Clinton County to be used during a smallpox vaccination and diphtheria immunization campaign.

Respectfully submitted,

JEAN MCARTHUR, Secretary.

ANNUAL MEETING OF THE AMERICAN COLLEGE OF PHYSICIANS

The Sixteenth Annual Clinical Session of the American College of Physicians will be held in San Francisco, California, April 4-8, 1932. The headquarters in San Francisco will be the Palace Hotel, where the general scientific sessions, registration, and exhibits will be held. Clinics will be conducted in various hospitals and institutions in San Francisco and near-by communities.

Dr. S. Marx White, Minneapolis, President of the College, has in charge the selection of speakers and subjects on the general program, while Dr. William J. Kerr, San Francisco, Professor of Medicine at the Uni-

versity of California Medical School, is the General Chairman of the Session, and is responsible for all local arrangements, in addition to the arrangement of programs and demonstrations. Following the San Francisco Session a post-convention tour will be conducted through Yosemite Valley, Southern California, (with two days in Los Angeles) and the Grand Canyon of Arizona.

The attention of the secretaries of various societies is called to the above dates, in the hope that their societies will select non-conflicting dates for their 1932 meetings.

HOSPITALS APPROVED FOR INTERNSHIPS

By the Council on Medical Education and Hospitals of the American Medical Association. Revised to Aug. 15, 1931.

The following Illinois general hospitals are considered in position to furnish acceptable internships for medical graduates.

REPORT OF THE WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

Though relatively few could attend, yet all our Auxiliary women everywhere are interested in our recent convention, the 9th Annual meeting of the Woman's Auxiliary of the American Medical Association, in Philadelphia.

The convention attendance was the largest in the history of the organization. More than 1,400 delegates, members and guests were present.

Activities began Monday, June 8, with a luncheon in honor of the National President, followed by three round-table conferences. These were as follows:

1. Programs for County Auxiliary Meetings.
2. The Technique and Value of a Committee on Public Relations.
3. History and Archives.

The Convention proper was officially opened by the President, Mrs. J. Newton Hunsberger, at 9 A. M., Tuesday, June 9. Besides much other business, all standing committees reported at this meeting. These were: Organization, Program, Finance, Legislation,

		Number of Beds						Internships						
		Surgical	Medical	Obstetric	Pediatric	Other	Total	Affiliated—for What Service	Number	By Examination or Appointment	Length of Service in Months	Begin	Salary per Month	Dispensary Service
Name of Hospital														
ILLINOIS														
Alexian Bros. Hosp. (male patients only).....	Chicago	168	96	..	..	25	289	(22)	7	Ap.	12	July	\$50	Req.
American Hospital	Chicago	55	55	25	15	..	150	No	4	Ap.	12	June	\$25	No
Augustana Hospital	Chicago	150	50	30	25	95	350	No	13	Ap.	18-24	Jan. & July	No	Req.
Chicago Memorial Hospital.....	Chicago	32	32	20	4	20	108	No	4	Ap.	12	July	\$25(j)	Req.
Columbus Hospital	Chicago	50	30	23	21	35	159	No	4	Ap.	12	July	\$25	None
Cook County Hospital.....	Chicago	yes	yes	yes	yes	yes	3,300	No	99	Ex.	18	Jan. & July	No	None
Edgewater Hospital	Chicago	yes	yes	22	18	yes	140	No	5	Ap.	12	July	\$25	None
Englewood Hospital	Chicago	yes	yes	22	6	..	102	No	4	Ap.	12	Jan. & July	\$25	Req.
Evangelical Hospital	Chicago	52	30	60	18	40	200	No	6	Ap.	12	July	\$25(k)	None
Frances E. Willard Hospital.....	Chicago	78	45	26	10	26	185	No	5	Ap.	12	Jan. & July	No	Req.
Garfield Park Hospital.....	Chicago	yes	yes	yes	yes	yes	196	No	7	Ap.	12	July	No	None
Grant Hospital	Chicago	60	34	50	yes	yes	300	No	8	Ap.	12	July	No	Req.
Holy Cross Hospital.....	Chicago	yes	yes	yes	yes	yes	124	No	4	Ap.	12	June	\$10	None
Hospital of St. Anthony de Padua.....	Chicago	117	40	48	15	..	200	No	6	Ap.	18	(1-c)	\$10	None
Illinois Central Hospital	Chicago	yes	yes	yes	yes	yes	300	No	8	Ap.	12	(1-c)	No	Req.
Illinois Masonic Hospital	Chicago	yes	yes	25	6	yes	167	No	6	Ap.	12	July	No	Req.
Lake View Hospital.....	Chicago	50	27	31	..	32	140	No	4	Ap.	12	July	\$25	None
Lutheran Deaconess Home and Hospital.....	Chicago	yes	yes	yes	yes	yes	209	No	7	Ap.	12	Apr. & July	\$25	None
Lutheran Memorial Hospital.....	Chicago	71	47	32	..	35	185	No	4	Ap.	12	July	\$25	Req.
Mercy Hospital	Chicago	yes	yes	yes	yes	yes	400	No	16	Ex.	12	July	No	None
Michael Reese Hospital.....	Chicago	32	40	36	129	119	356	(23)	32	Ap.	24	Jan. & July	No	Op.
Mother Cabrini Memorial Hospital.....	Chicago	59	21	33	16	39	168	No	4	Ap.	12	Feb. & June	\$25	None
Mount Sinai Hospital.....	Chicago	yes	yes	44	21	44	204	No	9	Both	12	July	No	Op.
Norwegian-American Hospital	Chicago	74	49	50	12	65	205	No	7	Ap.	12	Jan. & Apr.	\$20	Req.
Passavant Memorial Hospital.....	Chicago	yes	yes	yes	yes	yes	198	No	13	Ap.	12-24	(1-d)	No	Req.
Presbyterian Hospital	Chicago	yes	yes	40	50	yes	412	No	30	Ap.	12-16	Varies	No	Req.
Provident Hospital (coll).....	Chicago	yes	yes	5	8	yes	65	No	6	Ap.	12	July	No	Req.
Ravenswood Hospital	Chicago	yes	yes	42	5	yes	195	No	4	Ap.	12	Varies	\$25	None
Research and Educational Hosp. Univ of Ill.....	Chicago	30	37	17	14	92	190	No	12	Both	12	July	No	None
Roseland Community Hospital.....	Chicago	yes	yes	29	yes	24	125	No	4	Ap.	12	July	\$50	None
St. Anne's Hospital	Chicago	109	56	57	22	66	310	No	7	Ap.	12	July	No	Req.
St. Bernard's Hospital	Chicago	46	82	51	21	..	200	No	8	Ap.	12	July	No	None
St. Elizabeth's Hospital	Chicago	yes	yes	yes	yes	yes	350	No	6	Ap.	12	July	\$25	None
St. Joseph's Hospital	Chicago	90	50	35	25	..	200	No	7	Ap.	12	Apr. & July	No	Op.
St. Luke's Hospital	Chicago	184	72	31	yes	472	659	No	42	Ex.	12	Apr. & July	No	Req.
St. Mary of Nazareth Hospital.....	Chicago	122	50	38	16	24	250	No	8	Ap.	12	July	No	None
Swedish Covenant Hospital.....	Chicago	80	55	45	..	45	225	No	6	Ap.	12	Mar.	\$30	None
U. S. Marine Hospital	Chicago	35	88	..	..	27	150	(24)	5	Ap.	12	July	(b)	None
University Hospital	Chicago	yes	yes	yes	yes	yes	100	No	3	Ap.	12	July	\$15	Op.
University of Chicago Clinics.....	Chicago	yes	yes	..	yes	yes	333	(25)	22	Ap.	12	(1-c)	No	Req.
Washington Boulevard Hospital.....	Chicago	yes	yes	yes	..	yes	110	No	6	Ap.	18	(1-e)	No	Req.
Wesley Memorial Hospital.....	Chicago	yes	yes	yes	yes	yes	275	No	18	Ap.	18	(1-f)	No	None
West Side Hospital.....	Chicago	yes	yes	yes	yes	yes	197	No	6	Ap.	12	Jan. & July	No	Req.
Decatur and Macon County Hospital.....	Deatur	yes	yes	25	yes	yes	165	(26)	3	Ap.	12	July	\$25	Op.
St. Mary's Hospital.....	E. St. Louis	125	84	26	25	..	260	No	4	Ap.	12	July	\$25(k)	None
Evanston Hospital	Evanston	95	36	36	39	65	271	No	12	Ap.	12	(1-c)	No	Req.
St. Francis Hospital	Evanston	yes	yes	81	44	40	370	No	8	Ap.	12	(1-c)	\$25	None
U. S. Naval Hospital.....	Great Lakes	160	385	..	..	400	975	(27)	6	Both	12	June	(b)	Req.
St. Joseph's Hospital.....	Joliet	80	56	44	12	..	192	No	2	Ap.	12	July	\$50	None
Oak Park Hospital.....	Oak Park	50	35	35	10	45	175	No	5	Ap.	12	July	\$10	None
West Suburban Hospital.....	Oak Park	170	43	94	20	100	427	No	12	Ap.	12	July & Oct.	No	Req.
Rockford Hospital	Rockford	yes	yes	18	9	..	110	No	2	Ap.	12	Jan. & July	\$50	None
St. Anthony's Hospital	Rock Island	70	47	20	10	3	150	No	2	Ap.	12	June & Sept.	\$35	Op.

Public Relations, Hygeia, Revision, Press and Publicity Printing. It is of interest to know we have over 12000 paid-up members. Income the past year was \$5,338.13 and expenscs to April 1 were \$3,087.69.

The program of the Wednesday session embraced as its outstanding features the report of State Presidents, and the election and introduction of new officers.

The post-convention Board meeting was held Thursday morning and was presided over by the newly installed President, Mrs. A. B. McGlothlan, who outlined her policies for the coming year and announced her committee appointments. Two features of this meeting gave interesting and helpful results. These were responses to the topic "What have I gotten out of this Convention?" and the discussion incident to opening "A question and suggestion box."

Not only Pennsylvania but New Jersey and Delaware Assisted in the entertainment provided for this convention. Trips to historic and other points of interest, teas, luncheons and receptions showed the hospitality and resourcefulness of the splendid Convention Committee.

Next year the convention will be in New Orleans in April. Plan now to attend that meeting.

NEWS ITEMS FROM COUNTY AUXILIARIES

Coles Cumberland County. One of the prettiest summer parties this season was given in July at the home of Dr. and Mrs. R. H. Craig in Charleston, with the husbands as guests of the Auxiliary. A picnic dinner was served on small tables, arranged in the attractive flower garden of the Craig home. There were members present from Mattoon, Charleston, Neoga, Toledo and Greenup, including Dr. and Mrs. T. O. Freeman, the latter our State President.

Cook County. The first meeting of the season was held October 7 at the Medical and Dental Arts Club. Dr. John R. Harger was guest speaker. Past Presidents of the Woman's Auxiliary to the Chicago Medical Society were guests of honor.

Douglas County. During June the Douglas County Medical Association and members of the ladies auxiliary held their annual picnic at Patterson Springs. Dr. Frederick B. Balmer of Northwestern Medical University gave the principal address.

Randolph County. The September meeting of the Randolph County Auxiliary was held in conjunction with the Medical Society at Chester, Illinois, September 10. The auxiliary held their luncheon at the Hotel Royal. After the business session they were taken to the prison and shown the points of interest and through the prison hospital, after which they were entertained by Mrs. C. C. Rowley, Mrs. C. O. Boynton, president of the auxiliary was present, and in charge of the meeting.

Vermilion County. This auxiliary entertained their doctor-husbands at a buffet supper June 2 at the Soldier's Home. Mrs. S. M. Hubbard, the president, gave full report of state meeting at East St. Louis, followed by general discussion of the purposes and plans of the auxiliary for the ensuing year.

At their October 6 meeting an unusual program of educational interest followed through the "Review of Hygeia" by Mrs. O. J. Michael. A paper on "Small-pox" endorsed by the Illinois State Medical Society was presented by Mrs. D. C. Good and discussed by the members. A questionnaire on "Contagious Diseases" was prepared and all present participated.

MRS. F. P. HAMMOND,
Press and Publicity Chairman.

AMERICAN BOARD OF OTOLARYNGOLOGY

An examination was held in Indianapolis, Indiana, September 12, 1931, just prior to the meeting of the American Academy of Ophthalmology and Otolaryngology held in French Lick, Indiana. Forty-three candidates were examined, of which nine were conditioned or failed.

The Board will hold an examination in New Orleans on May 9, during the meeting of the American Medical Association, and in Montreal, next fall, just prior to the session of the American Academy of Ophthalmology and Otolaryngology.

Prospective applicants for certificates, should address the Secretary, Dr. W. P. Wherry, 1500 Medical Arts Building, Omaha, Nebraska, for proper application blanks.

W. P. WHERRY, M. D.,
Secretary-Treasurer.
H. P. MOSHER, M. D.,
President.

TULAREMIA FROM OPOSSUM

The case history of a patient at Beecher City, Illinois, indicates that the individual got tularemia from an opossum which she dressed. This information appears in the records of the Chicago branch diagnostic laboratory of the State Department of Public Health. A specimen of blood from the patient which proved positive for tularemia was examined at the laboratory.

PLASTIC OPERATION TO RESTORE VOLUNTARY ANAL CONTROL

Harvey B. Stone, Baltimore (*Journal A. M. A.*, Oct. 24, 1931), reports and reviews seven further cases of anal plastic operations together with four previously recorded cases, with nine good and two poor results. A further modification of the method to secure better protection against infection is described. The operation depends on the utilization of the gluteus muscles. Hence it is obvious that if these muscles are for any reason not functioning this operation cannot be expected to succeed. Also until the patient learns to use the glutei properly the full benefit is not obtained. Hence education of the patient in this regard is important. He must be trained to contract the buttocks when necessary. It follows that patients who cannot be taught to do this, because of lack of interest or of intelligence, do not improve as much as others. One case of the author's series was an instance in point. The anatomic and surgical result was excellent, but the patient did not

always remember to use his new power of anal control. Because of this necessity for education, the successful cases do not show as much immediate improvement as will ensue ultimately.

PROSTATIC OBSTRUCTION: ELECTROCARDIOGRAPHIC STUDY OF THREE HUNDRED AND TWENTY-ONE CASES

In a study of 321 cases of prostatic obstruction Charles M. Bacon, Herman L. Kretschmer, Chicago, and Lewis W. Woodruff, Joliet, Ill. (*Journal A. M. A.*, Oct. 24, 1931), demonstrated the frequency of myocardial disease. There were 35.8 per cent with heart disease in the group of all ages. The frequency of left axis deviation and myocardial disease in relation to age showed a progressive increase in these conditions with advancing years. Of a total of 115 with heart disease, 90, or 78 per cent, showed abnormal electrocardiograms. Emphasis is laid on the pre-operative and postoperative care and choice of anesthetic in patients with cardiac disease. Four postoperative deaths due to heart disease are analyzed. A series of forty-seven patients returning some time after operation showed in general considerable improvement in cardiac function as a result of the relief obtained by surgery. From their electrocardiographic study the authors are convinced of the value of recognizing preoperatively the presence of cardiac disease in patients with prostatic obstruction irrespective of clinical cardiac signs. The electrocardiogram is, however, an aid, not the final criterion, in the diagnosis of myocardial disease.

THE OATH OF HIPPOCRATES

I swear by Apollo, the physician, and Aesculapius, and Health, and All-Heal, and all the Gods and Goddesses, that, according to my ability and judgment, I will keep this oath and stipulation: To reckon him who taught me this art equally dear to me as my parents, to share my substance with him and relieve his necessities if required; To regard his offspring as on the same footing with my own brothers, and to teach them this art if they should wish to learn it, without fee or stipulation, and that by precept, lecture and every other mode of instruction, I will impart a knowledge of the art to my own sons and to those of my teachers, and to disciples bound by a stipulation and oath, according to the law of medicine, but to none others.

I will follow that method of treatment, which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; furthermore, I will not give to a woman an instrument to produce abortion.

With purity and with holiness I will pass my life and practice my art. I will not cut a person who is suffering with a stone, but will leave this to be done by practitioners of this work. Into whatever houses I enter I will go into them for the benefit of the sick, and will abstain from every voluntary art of mischief and cor-

ruption; and further from the seduction of females, or males, bond or free.

Whatever, in connection with my professional practice, or not in connection with it, I may see or hear in the lives of men which ought not to be spoken abroad, I will not divulge, as reckoning that all such should be kept secret.

While I continue to keep this oath unviolated, may be granted to me to enjoy life and the practice of the art, respected by all men at all times, but should I trespass and violate this oath, may the reverse be my lot.

TREATMENT OF POLIOMYELITIS

John Ruhräh, Baltimore (*Journal A. M. A.*, Oct. 24, 1931), summarizes the treatment of poliomyelitis thus: The early treatment should be by the injection of convalescent serum or that taken from patients who at some time have had the disease. Stocks of this serum should be kept on hand by health departments, hospitals and similar institutions. Divided into proper doses, placed in small bottles and dried, it keeps practically indefinitely, and all that is needed is to add sterile water to it to make up the required amount. During the febrile period all efforts at treatment should aim to make the patient as comfortable as possible, using the technic which would be applied to any acute infection. Rest is essential and the late results are best when that is insisted on, whether the case is mild or severe. The patient should be kept in bed as long as there is pain, but during this period it may be advisable to lift him to another bed or comfortable chair while the bed is aired or made. This change is often most grateful to the patient and if it can be done without undue pain or fatigue apparently does no harm. When the legs are affected the patient should be kept either in or on the bed for at least six months and longer in many cases. The treatment of poliomyelitis after the febrile period consists in rest, relief of pain, prevention of deformity, massage and exercise, which may be passive, assisted, voluntary, carried out under water, but always supervised. Failure to prevent deformities due to contraction of the muscles, tendons and fasciae is the greatest sin of omission. The contractions take place very quickly; a week or ten days' neglect may result in a foot drop which may cost the patient much pain and the physician much trouble. No patient with extensive paralysis escapes without contractions, but they should be kept at a minimum by care and treatment. If they occur they should be treated as early as severe pain permits.

SMALLPOX THROUGHOUT THE WORLD

Reports from the League of Nations show that India alone recorded more cases of smallpox during the first half of 1931 than did the United States. From India 63,376 cases were reported against 22,184 from the United States. England and Wales stood third on the list with 4,412 reported cases. No cases were reported from Scotland, Germany, Italy, Netherlands, Switzerland, Philippine Islands and Lithuania.

Illinois contributed 1194 cases toward the aggregate prevalence in the United States.

Original Articles

THE PUBLIC HEALTH ASPECTS OF ARTIFICIAL PNEUMOTHORAX THERAPY*

ALLAN J. HRUBY, M. D.

CHICAGO

It is only within comparatively recent times that we are coming to appreciate the importance of pneumothorax therapy in public health work. In fact, pneumothorax, in itself, is a comparatively modern procedure.

History. Carson, in 1823, was the first to mention the therapy of artificial pulmonary collapse. To Forlanini of Pavia, Italy, however, goes the credit of having first introduced artificial pneumothorax as a practical method of treatment. He performed his first operation in 1888 and reported his first cases in 1894 and 1895.

In 1898 Dr. J. B. Murphy, independent of Forlanini, introduced pneumothorax treatment in five cases. In the same year Dr. Frederick Tice, President of the Board of Directors of our institution, administered pneumothorax therapy to patients at the old Dunning tuberculosis institution. Owing to the fact that the street cars on Irving Park Boulevard at that time did not run within a couple of miles of Dunning, it was necessary for the patients, after their gas injections, to walk or ride a bicycle this distance of a couple of miles to the cars.

In Chicago as elsewhere, notwithstanding the early work of Doctors Murphy, Tice and others, the procedure of pneumothorax did not gain as wide an acceptance as it merited. As late as 1920, of the 2,461 patients dismissed from the Municipal Tuberculosis Sanitarium in the course of the year, only two had received pneumothorax therapy. Today, in our pneumothorax clinic alone we are treating thirty-six patients. This clinic, operating in connection with our dispensaries, was established in May, 1929, and to date sixty patients have received 607 treatments. There are two four-hour sessions a week, and, on the average, five patients are treated. The dispensary is equipped with an x-ray and fluoroscope and the physician in charge has had long training in the work.

*Read before the Alumni Clinic, University of Illinois, June 12, 1931.

The Private Practitioner and Pneumothorax. The average physician is not personally interested in the application of pneumothorax. He has not the time and, frequently, has not the inclination to busy himself with the minute technicalities involved. In many instances his patient can not afford a specialist's fee.

Observation Time. Even the physician interested in pneumothorax work, who decides to administer his own treatments, finds himself sooner or later in considerable difficulty. The observation time necessary is not to be counted in weeks or months; it must be counted in years and the physician who engages in pneumothorax work must realize that continued supervision of the individual patient over a series of years is necessary.

Expense. The expense involved in continued pneumothorax therapy over a prolonged period is prohibitive for many individuals of the wage-earning class. The chronicity of tuberculosis and the continued drain reduces the economic condition of the patient and his family to a level at which they cannot afford large additional expenses.

Dangers. Irrespective of duration and expense there are certain dangers incident to the private management of pneumothorax patients which must be considered. The private physician, even when absolutely conscientious and worthy, may find it difficult to retain management of his patient. The patient may become dissatisfied and discontinue treatment. The dangers incident to this action on the part of the patient need not be discussed here.

Furthermore, certain difficulties may arise with which the private practitioner may find it difficult to cope. Complications, as effusion, pyopneumothorax, collapse, emphysema, and perforation of the lung may cause considerable worry to the practicing physician. A death occurring during gas administration in the doctor's office is more difficult to explain than a death occurring in a clinic or sanatorium. The doctor in his office may have used faultless technique and skill; nevertheless, notwithstanding his proficiency in the work, he may be subjected to severe censure and worry.

The Pneumothorax Program in the Field as a Boon to the Practicing Physician. From what we have said it is obvious that the expansion of a pneumothorax clinic in the field is a boon to

the practicing physician. We contemplate in the near future a considerable development of our pneumothorax clinic facilities. We propose, in our expanded program, to make the application of pneumothorax available to any physician whose patient is not in an economic position to pay a specialist's fee. It is our plan that the physician with a patient needing pneumothorax may, at any time, call on our pneumothorax clinic for consultation and advice, free of charge. He may personally bring in his patient and assist at the operation; he may, on the other hand, in cases in which such procedure is indicated, request that the pneumothorax treatment be administered in the home. It will be our aim to broadcast amongst the profession the advantages of lung compression, to encourage the physician to seek out cases suitable for such treatment, and to offer the private physician every cooperation and courtesy in the management of his case.

No attempt will be made to interfere in any way with the routine of practicing physicians or the program of other institutions. We believe that the routine of pneumothorax application should be continuous, should be administered during its entire course by the same individual or by the same institution. Consequently, it will be our aim in the case of patients who have been treated by physicians or other institutions, to refer back such patients when they need refills, to the physician or agency who initiated the pneumothorax procedure.

General Application of Pneumothorax as a Public Health Measure. We wish to stress particularly the role of pneumothorax therapy as a public health measure. In the past we have been inclined to stress pneumothorax treatment, applied by a large institution, as a definitely sanatorium procedure. The tendency was to keep the patient in residence in the sanatorium for comparatively long periods of time. The patient, when finally discharged was, as a rule, instructed to return to the sanatorium for refills.

The tendency today is toward more rapid turnover of sanatorium patients, toward an acceleration of the tempo in sanatorium routine. From the public health standpoint, a brief sanatorium stay for the many is, in every sense, more desirable than a prolonged sanatorium residence for the few. In an effort to reach this objective, the tendency today is toward the extension of sanatorium routine into the home and as a first step

in this direction, the expansion of the pneumothorax program is especially desirable.

Three-fold Advantage. The advantages of a pneumothorax program in the field, from the public health standpoint, are three-fold and may be classified under the following heads:

A—Education.

B—Economics.

C—Control of infection.

Education. The application of pneumothorax therapy will make sanatorium education available to a much greater number of patients. The importance of even a brief period of sanatorium education is fully realized by the practicing physician.

Economics. From the point of view of economics, the establishment of a pneumothorax clinic is a sound public health measure. The patient who occupies a bed in a sanatorium at a per capita cost of \$15.00 to \$20.00 a week, may be treated acceptably in his home at an annual cost of a few dollars. The field or dispensary staff is paid on an annual basis and can be trained to undertake the new duties without additional expense.

From the economic standpoint, for instance, we have in Chicago at the present time a very disturbing problem. Our Sanitarium has a capacity of 1,125 beds and every bed is taken. In addition, there is a waiting list of four hundred. It is manifestly impossible in this community or in any other community, to provide sanatorium or hospital accommodations for all the victims of tuberculosis who need such accommodations.

According to the Framingham experiment, there are in the community nine cases of tuberculosis for each death. These figures would indicate, and we consider it a low estimate, that there are approximately 22,000 cases of tuberculosis in Chicago. On the other hand, we have in Chicago, sanatorium and hospital bed accommodations for only 1,567 patients. We can never hope to finance a building program which will house such a number of tuberculous individuals. Consequently, we must stress rapid sanatorium and hospital turnover, must accelerate the tempo of sanatorium routine, and must emphasize the necessity of taking the sanatorium program, including pneumothorax, into the home.

As a further indication of the necessity of shortening the sanatorium stay, I may say that at the present time we have twenty-six open cases

of tuberculosis who are unwillingly in contact with children. These cases are quite willing and ready to go to our Sanitarium, the Cook County Hospital, or Oak Forest. Even for these patients, who may be considered emergency cases, no beds can be found and they are obliged to remain in contact with children, undoubtedly endangering the lives of the latter and helping to spread tuberculous infection. Lawrason Brown and John Hayes state the economic argument is strongly in favor of beginning the treatment earlier in the course of the disease, after a shorter period of observation.

Control of Infection. The application of pneumothorax in the ideal case eliminates bacilli from the sputum. In many cases, owing to adhesions and other local conditions, a complete compression can not be obtained and the sputum may remain positive. In the majority of instances, however, pneumothorax as well as exercising a most beneficial influence on the course of the disease, converts the positive into a negative case.

The importance of this change, from the public health standpoint, can not be overestimated. The dissemination of infection in the community will vary, of course, directly with the number of open cases. A marked decrease in open cases engendered by a widespread pneumothorax program of necessity must decrease the incidence of tuberculous infection.

A few figures will illustrate. In a series of 96 cases subjected to pneumothorax and carefully studied at the Sanitarium, 61 previously with positive sputum became negative. Of the remainder, 22 cases had to be abandoned on account of adhesions or other complications. Consequently, in only 13 cases which were in a condition to receive adequate treatment did the sputum remain positive.

In a total of 47 cases treated in the dispensary, 25 cases, at the inception of the treatment, were positive. Of these, 19 became negative as the pneumothorax treatment progressed. Consequently, including the Sanitarium and the dispensary series, we have a series of 80 cases who were, as it were, neutralized as sources of infection.

The control of positive sputum cases by pneumothorax is, of course, much more efficient than any other possible means of control or isolation that may be devised. It is a mechanical control not dependent on the cooperation of the patient.

Even the well-trained consumptive, notwithstanding his intentions and training, may be and frequently is dangerous. He covers his mouth a fraction of a second too late after the cough. The bacilli are disseminated and may possibly cause infection.

The inauguration, then, of a widespread pneumothorax program devised to reach large numbers of tuberculous individuals throughout the community must be regarded as an extremely efficient public health measure.

Phrenicoexeresis and Thoracoplasty. As well as pneumothorax, phrenicoexeresis and thoracoplasty may, and indeed from a certain standpoint, must be considered as public health measures. In the same way as pneumothorax, these procedures tend to shorten sanatorium stay and tend, also, to decrease the incidence of positive cases in the community.

Indications for Pneumothorax. As the object of this paper is to stress, particularly, the public health aspects of pneumothorax and the allied procedures, I will not go into fine detail concerning indications.

Forlanini, when he first described his technic, insisted that treatment be used only in far-advanced cases after everything else had been tried and also insisted that the lesions must be strictly unilateral. As we all know, these indications today have widened very considerably. We do not, today, insist on a perfectly good, contralateral lung nor do we stress the administration of pneumothorax as a final measure after other measures have failed.

Briefly, cases suitable for pneumothorax therapy may be divided into four classes:

1. Hemorrhage cases, otherwise uncontrollable.
2. Unilateral cases with good compensatory contralateral lung. It is the acute and progressive form of disease in which artificial pneumothorax has its best indications.
3. Bilateral cases in which cough and serious toxemic symptoms may be relieved by partial collapse of one lung or even of both lungs.
4. Young persons, in whom activity occurs, provided it is unilateral.

Percentage of Cases Suitable for Treatment. This, of course, is a difficult problem to answer as no two series of cases studied may be similar in all respects. Figures obtained from the experience of various authors indicate the percentage

of cases suitable as ranging between five and ten per cent.

At our Sanitarium at the present time we have 62 cases under treatment. The number of cases fluctuates, of course, from time to time. I believe however, that the percentage of cases found suitable for pneumothorax in our Sanitarium ranges around 12 per cent.

Contraindications. As contraindications, I may mention briefly—acute miliary tuberculosis, diseases of the heart and kidneys and diabetes; also tuberculous disease at the base of the better lung and definitely acute disease in any part of the lung; also asthma and emphysema.

Technic. As with indications, I can only hope in a paper of this scope to explain briefly some considerations in technic. We must stress, in the first place, that pneumothorax, while it appears as a comparatively simple procedure, should not be considered lightly. Strict asepsis must be followed and novocain or butyn solution of one-half per cent. used as a local anesthetic. When possible, the mid-axillary line in the sixth or seventh interspace is selected because the chances of entering are better. It is our practice to give a small amount of gas, from 200 to 350 cc., depending, of course, on the amount of free pleural space available. These treatments are repeated p.r.n., and it is advisable to finish with slightly negative or neutral intrapleural pressure. In the presence of adhesions, higher pressure is indicated.

The principles in technic may be summarized as follows:

1. Avoid sudden change in the intrathoracic equilibrium and in the relative position of the intrathoracic viscera.
2. Avoid high pressure in the presence of a flexible mediastinum.
3. Aim gradually but definitely to increase positive intrapleural pressure in cases in which pleural obliteration is threatened.
4. Determine in each individual case the pressure required.

If the pleural space is found to be free and air is allowed to flow, the manometer should be consulted at each 50 c.c. of air given. A small, initial dose should be given. J. B. Murphy advised giving large doses—3,000 c.c., while Forlanini gave 200 to 300 c.c. Clinical observations seem to favor the latter procedure. In low pressure installations, no displacement of the medias-

tinum or heart occurs and effusions are not as likely to result.

Refills—Frequency and Amounts. After the initial inflation, the next few treatments should be given every third or fourth day. The amount of gas given must not be too large and must diminish as the lung tends toward complete collapse. Success or failure depends very largely on the correct spacing of the intervals between refills and on maintaining the correct degree of collapse. Individualization is the keynote of success.

Complications. Concerning complications, again speaking briefly, I may mention pleural shock and air embolism. These disturbing phenomena are comparatively rare. In more than 6,000 inflations which we have given, there has been but one case of air embolism. Pleural effusion is a common and rather serious complication; pyothorax, of course, is more serious still.

The possibility of reactivation of the contralateral lung must be kept in mind. During the treatments, in order to detect the onset of complications as well as to observe the effect of the gas, frequent x-ray and fluoroscopic examinations are essential. Spontaneous pneumothorax, emphysema, and perforation of the lung are less frequent complications.

Results. In a series of pneumothorax treatments at the Sanitarium, extending over a period of four years, we found that approximately 24 per cent. were discharged as arrested. Many of these are working today. Twenty-one per cent. were improved; the remaining 55 per cent. are still under treatment.

Duration. It is better to continue too long than to fall into the routine of allowing re-expansion to occur too soon. Doubtless the best results are obtained when a collapse is carried on over a period of from two to five years, depending on the individual case.

PHRENICOEXERESIS

Phrenicoexeresis aims at the same objective as pneumothorax, namely pulmonary rest, and has the same public health relationship. The diaphragm, one of the major muscles of respiration, is probably permanently paralyzed following phrenicoexeresis. With the rising of the paralyzed diaphragm, the capacity of the thorax on the side operated on is decreased and, consequently, there is a definite collapse of the lung

structure on that side. The average rise of the diaphragm is probably 4 cm., and the reduction in vital capacity 25 to 30 per cent.

A total of 209 cases of phrenicoexeresis have been done at our Sanitarium, with the following results:

	Improved	Unchanged	Worse
186 Phrenicoexereses.....	115	45	26 (17 dead)
23 Phrenicoexereses and Thoracoplasty	18	1	4 (dead)
	<u>133</u>	<u>46</u>	<u>30</u>

In other words, 64 per cent. of those operated on improved, 22 per cent. remained unchanged, and 14 per cent. became worse or died.

THORACOPLASTY

The last measure in our triad of pulmonary surgical procedures is thoracoplasty. It is also last in the order of application and should be tried only when other methods of treatment have been tried and found wanting.

Again, as in the case of pneumothorax and phrenicoexeresis, thoracoplasty has a definite public health relationship. Thoracoplastic procedure will release the patient from the sanatorium in a shorter time, will tend to decrease the incidence of open cases in the community and will, of course, benefit the individual case, saving many patients formerly considered hopeless.

As to the technic, indications and contraindications in thoracoplasty, Dr. Hedblom of our consulting staff has written a splendid article on this subject which was published in our January-February, 1929, *Bulletin*.

In a series of 68 cases reported on at our Sanitarium during the past six years, there were only three deaths within three weeks following the operation, giving an operative mortality of 4.4 per cent. by patients and 1.3 per cent. by operation. Of the sixty who survived, two were not improved. All the remaining patients were improved in varying degrees, approximating a complete symptomatic cure.

SUMMARY

Pneumothorax and the allied surgical procedures—phrenicoexeresis and thoracoplasty—are desirable not only from the standpoint of the individual patient but also from the standpoint of public health. Such procedures tend to shorten the period of sanatorium residence, to diminish the incidence of open cases in the com-

munity and to make practical the treatment of a larger number of cases in the home.

A field or dispensary program of pneumothorax treatment is a practical public health step and will bring the advantages of pneumothorax treatment to a large circle of patients who are now denied this mode of therapy.

The dispensary pneumothorax program will make it possible for the practicing physician to give such of his patients as cannot afford a specialist's fee, the advantages of pulmonary collapse.

The indications for pneumothorax have widened considerably in recent years and it is no longer a final measure after everything else has been tried.

The dispensary program of pneumothorax will widen further the indications and bring to the attention of physicians many cases which may be suitably treated by gas inflations.

In the search for cases suitable for pneumothorax many cases suitable for phrenicoexeresis and thoracoplasty undoubtedly will be uncovered and receive proper treatment.

1130 North Lorel Avenue.

THE DUALITY OF DIABETES MELLITUS AND PULMONARY TUBERCULOSIS

JOHN RITTER, M.D.

Assistant Professor Emeritus of Medicine, Rush Medical College, the University of Chicago

MIAMI, FLORIDA

Diabetes mellitus, as a symptom complex, was very early recognized by the medical profession. In those early days the method of treatment was chiefly symptomatic; mostly empirical, and with the giving of anodynes, usually codein, and the control of the intake of sugar, the instituting of an anti-diabetic diet generally limiting the carbohydrate and fat intake proportionately, much good was accomplished.

Later, the Allen treatment and that of Joslin, with the regulation of the giving of carbohydrates, fats and proteins, in estimated amounts in each individual case, with perhaps a strict diet lasting from one to four or five days was used and a great step forward was achieved in the treatment of this disease. But, with the introduction of the hormone, insulin, about a decade ago, the only true, rational method for con-

trolling diabetes was given to the medical profession.

As to the number of people afflicted with diabetes mellitus, views differ greatly. From various sources it was estimated that this number throughout our country may approximate the million mark, and that in a small number of the above mentioned cases there exists also a dualistic state—a diabetes mellitus accompanied by an existing pulmonary tuberculosis, and the number of people who are suffering from both these diseases is also variously estimated from 0.5, 1.3 to 2%. However, the average may be close to 1.6% or 16,000 cases. This number, however, is of such tremendous significance that it should receive our most serious consideration.

The incidence and prevalence of these two diseases, diabetes and pulmonary tuberculosis, in this dual role, in one and the same individual, have not received the necessary attention, have not been sufficiently emphasized by phthisiotherapists, and although quite a few papers and manuscripts are offered by internists, by clinicians, comparatively few by specialists who are doing intensive tuberculosis work.

From the first assembly of tuberculosis workers in Washington, in 1905, after the organization of the National Tuberculosis Association, up to and including the meeting of 1931, covering a period of twenty-seven years, 1,381 papers were read and discussed at these various gatherings, and during all these years only three papers were offered before this body of tuberculosis specialists, in which diabetes was considered as a concomitant symptom. These three papers were read at the meetings of 1918, 1922 and 1923, and in the discussion of these papers the pulmonary disorder received the most consideration. Equally important, from this viewpoint, was the meeting of the International Congress on Tuberculosis at Washington in 1908, where 284 papers were presented by different lung specialists from the various parts of the civilized world—when not a single paper was offered, or was consideration given to this dualistic syndrome—diabetes and tuberculosis.

Sansum³ (1923) in his report of patients under his care who had both diabetes mellitus and pulmonary tuberculosis, covers more the diabetic aspect than the pulmonary. In this paper here we are more concerned with the pulmonary

disorders; hence we only allude to the mentioned facts, that he observed the duality in three patients who came under his observation. He briefly reports, however, his pulmonary findings, and gives implicit direction how the diabetic patient should be taken care of under insulin, a strict diet and general treatment.

It does appear strange that two diseases with such diversity of causes should become associated.

The diabetic is usually over weight, obese, has a good appetite and digestion, is fond of over-eating, not fond of much exercise, is indolent, but as the disease progresses, it leads ultimately, as in pulmonary tuberculosis, to loss in body weight, weakness and death. And yet, with this diverging apparently diametrically opposed condition, the two diseases may be found in one and the same individual, associated. Then the question arises—which disease was first manifested in the patient? However conjectural this may be, the opinion of workers in tuberculosis is that the diabetic disturbance was primary. The great difference in the general appearance of the two diseases in two different individuals has often been mentioned, as if in direct opposition, and still the two diseases are often found associated.

Tuberculosis usually develops in the under-nourished, in those suffering from gastric disturbances, impairment of diet, indigestion, loss of appetite, becoming easily fatigued, a more or less tired feeling, underweight, or a progressive loss in weight. However, in the patient suffering from progressive diabetes mellitus, many of the above mentioned symptoms may be observed, giving the picture of a tuberculous disease, but this may then be leading to a wrong diagnosis.

Diabetes occurs most frequently in middle life; rarely in both extremes. The disease in early life usually leads to diabetic coma, to greater fatality or early speedy death, late in life, to a slower process, due to increased resistance, and still later in life, ultimately to exhaustion, cardiac degeneration, gangrene, etc.

The association of the two diseases presents a particularly vicious condition.

THE FREQUENCY OF PULMONARY TUBERCULOSIS IN THE DIABETIC

Montgomery¹ (1918) recorded that in 111 cases of diabetes collected from the Philadelphia

Hospital records, nine had active pulmonary tuberculosis as an accompaniment, and one tuberculosis of the adrenals. Out of 51 non-fatal cases of diabetes none had active pulmonary tuberculosis, but out of 60 fatal cases of diabetes the above mentioned 9 cases of pulmonary, and the one case of adrenal tuberculosis, were found at autopsy, and out of 35 fatal but non-autopsied diabetic cases, three had active pulmonary tuberculosis; out of 25 autopsied cases of diabetes 6 showed active pulmonary tuberculosis. Out of 355 autopsies collected from the literature since 1882, and up to 1918, when Montgomery made this observation, including his 25 cases, a total of 138 or 38.9% revealed pulmonary tuberculosis, mostly the active form.

The bulletin of the Mayo clinic, Wilder and Adams, in 5,500 cases of diabetes, found the incidence of pulmonary tuberculosis approximately 1.6%.

E. P. Joslin,⁶ in 3,000 cases found 43—about 14 in 1,000, or 1.4%.

Reginald Fitz,⁴ Peter Bent Brigham Hospital, Boston, 1,529 cases diabetes. Both diseases were present in 35, or 23 per 1,000, or 2.3%.

Arthur P. Derby,^a Herman Kiefer Hospital, Detroit, reports, in a personal communication, that out of a total of 1,081 cases of pulmonary tuberculosis diabetes was present in 11, which is an incidence of about 1%. This carries a period of about 18 months, namely: from January 1, 1929 to July 1, 1930.

From the records of the Detroit Tuberculosis Sanatorium,^d we can estimate that the incidence of diabetes in the tuberculous is about 1%.

The Chicago Fresh Air Hospital,^e after a careful examination of its records, gives the estimate as 1.33%.

According to Montgomery, tuberculosis did not occur more frequently in diabetes than in the general population at the same age period.

THE INCIDENCE OF DIABETES MELLITUS WHEN PULMONARY TUBERCULOSIS IS THE PRIMARY DISORDER

It is frequently observed that in a diabetic patient with a progressive tendency, who has been under observation for some time, a beginning pulmonary tuberculosis becomes manifest. It will also be of interest to observe, if a patient suffering from pulmonary tuberculosis, active

and progressive, has a diabetic disturbance. The general belief now upheld is that diabetes in an individual is the primary disorder. That in a person who for some time has had a healed lesion, the diabetes lowers the resistance; this may then lead to a reactivation of the supposedly healed or latent tuberculous process, and autoinfection or a reinfection from within take place, or that by lessening the vitality the immunity is lowered, and by the presence of the diabetes tubercle bacilli may gain entrance from without; causing a reinfection producing now an active tuberculous process in the diabetic individual.

Pulmonary tuberculosis, followed by diabetes, is considered comparatively infrequent. Out of 31,834 cases of pulmonary tuberculosis collected from 25 tuberculosis sanatoria in various parts of the United States, 101 cases of glycosuria, approximately $\frac{1}{3}$ or 1%, and 51 cases of diabetes (nearly $\frac{1}{6}$ of 1%) were reported, but some of these cases of glycosuria were undoubtedly diabetic.

The autopsy statistics are also greatly at variance. While the Henry Phipps Institute reports 1 diabetic in 479 pulmonary cases, the Jefferson Hospital, Philadelphia, reports a much greater number (more than four times the number) namely: 1 diabetic in 110 cases of pulmonary tuberculosis.

Lawrason Brown, Trudeau Sanatorium, mentions a case that developed a diabetes while under his observation and care at the sanatorium for pulmonary tuberculosis. To this we may add a case observed at the Jackson Memorial Hospital, in which a patient in the tuberculosis ward, after being a patient for some years, suddenly developed a concomitant disorder, a diabetes mellitus. This was the only case observed out of a total of 150 cases of pulmonary tuberculosis.

The early observations on the association of diabetes and tuberculosis. Morton (1694),¹⁰ "Yea, when I consider with myself how often in one year there is cause enough ministered for producing these swellings, even to those that are wont to observe the strictest rules of living, I can not sufficiently admire that any one at least after he came to the flower of youth, can die without a touch of consumption." From this we must conclude that as a keen observer, he noticed at that early period what we teach today, namely: that nearly every one, when he reaches maturity,

has a little tuberculous infection, and perhaps disease as well. Full credit should also be given him for being one of the first, in those early days of medical observation, for drawing the attention of the physicians of that time, in a report in this same monograph, on pulmonary tuberculosis being complicated with diabetes.

Credit should be given to Greisinger for reporting that first large group of patients who had both tuberculosis and diabetes. He reported 250 cases in 1858.

Windle, in 1883, reporting on 333 autopsies on diabetic patients, states that he frequently found pulmonary tuberculosis an associated disorder.

In the publications of the Universities of Paris, several theses appeared on this dual disease—tuberculosis and diabetes, by Bertail, 1873, Bagan, 1888, Sauvage, 1895.

The sugar in the blood of the normal and the diabetic individual. Normal blood sugar,⁷ 0.09 to 0.12 or 1 in 1,000, or 1/10 of 1%—approximately 0.1 in 100. Blood drawn in the morning, after 14 hours fasting, if 0.15% is considered pathologic. To be reliable, the blood must be drawn in the morning, 12 to 14 hours after a fast, to ascertain what influence a dietary treatment has on the blood picture. Normal 100 Mgs. per 100 CC. at the height of digestion, 0.15 to 0.17%. If large quantities of carbohydrates have been given, glucose may pass out in the urine, and during absorption of carbohydrate occurs a slight rise in the glucose content of the blood; during fasting it will be lowered to about 0.1%, and in mild diabetic cases a blood sugar value of 140 to 300 Mgs. per 100 CC.; in severe cases as high as 1,200 Mgs. per 100 CC. is observed. Too much reliance should not be placed on a urine analysis for sugar in the diabetic; in early or mild cases, 160 to 170 Mgs. to 100 CC. of blood. Attention should be directed to the hyperglycemia in the diabetic, and as the disease advances the glycosuria becomes less and less, a safe criterion; the permeability of the kidneys for sugar becoming less and less, being lowered ultimately so that no sugar appears in the urine. The treatment for blood sugar tolerance may then be raised in quantity so that the blood may contain 160 to 180 Mgs. in 100 CC., when sugar may be found in the urine.

A given quantity of carbohydrate yields in the

body 100% of glucose—no fatty acid. Protein yields 58% glucose and 46% fatty acid, and fat yields 10% glucose and 90% fatty acid, and the ratio of fatty acid to glucose must not exceed the proportion of 1.5 to 1.

According to some authorities, in some cases of acidosis the CO₂ determination of the blood is more reliable than the urinary findings. Cholesterol, in physical properties resembling the fats, is found in the blood in normal amounts, as 0.15%, is increased in diabetes with acidosis. Hence, in the diabetic, with ketosis, a blood determination for cholesterol should be attempted, even if diabetes is accompanied by pulmonary tuberculosis, in which instance the cholesterol of the blood is usually deficient. Many clinicians pay much attention to the cholesterol estimation in this dual disease.

Hemoptysis in diabetes mellitus and pulmonary tuberculosis. As to the presence, frequency or infrequency, of this syndrome views also vary greatly and, whereas, one clinician states it to be relatively rare, another with equal experience maintains that it is a frequent occurrence. The occurrence of this alarming symptom is of sufficient frequency to demand serious consideration. Landis¹ and his associates (1918) state that in twelve cases, 10 males and 2 females, that came under their observation, the incidence of hemoptysis was 11 times observed, and in his second report (1922) Landis² mentions this incidence, and gives the history of 3 patients who had both diabetes and tuberculosis, and the symptom of hemoptysis was observed in only 1, aged 51. In one of his cases, a female, aged 16, a congenital syphilis, which under arsphenamine was arrested, with a physical improvement in both diabetes and pulmonary tuberculosis. He also mentions a pleurisy in one of his patients, and in the 1918 report gives three patients, two male and one female, all in middle age (41, 42 and 43 respectively)—all of these, in their case histories, give a symptom of hemoptysis.

Shively considers hemoptysis a very frequent symptom, and states that he found it four times out of six cases under his care. Von Noorden states that in the case of diabetes and tuberculosis coming under his observation, he found hemoptysis present in 12%.

Sansum,³ in giving his views on the three patients who suffered from diabetes mellitus and

pulmonary tuberculosis, and who were under his care for some time, does not state whether hemoptysis was a symptom or not, and Naunyn's report of two cases of diabetes, one had an attack of hemoptysis; he also had a pulmonary tuberculosis, and Cordier and Sedaillier¹¹ in describing the frequency of diabetes and pulmonary tuberculosis, mentioned two cases—one a middle aged man, suffering from diabetes for about four or five years, who had a severe cough accompanied by hemoptysis.

In studying the histories of the 32 patients that came under our observation, we find that six, or a little over 18%, had blood spitting or hemorrhage. From all these observations, the question arises: Is hemoptysis more frequent in the tuberculous individual who also is afflicted with diabetes, than the patient who has no such complication? In the tuberculous with a hemoptysis, with or without cavitation, a urinary examination for sugar should be made in every case. If this is found to be negative for sugar, then a blood sugar test should be made for determining the amount of sugar present in 100 CC. of blood. In advanced cases of pulmonary tuberculosis and diabetes, it has frequently been proven that the urine may be negative for sugar, and still a hyperglycemia may be present. It follows from this, that in every case of pulmonary tuberculosis with an accompanying hemoptysis, a urinary examination for sugar should be made; this to be followed at once by a complete blood sugar test. This to determine if diabetes may or may not be an accompanying malady.

A study of the sanatoria and hospital cases under our observation.^B An analysis of the histories of the thirty-two patients which we had the privilege of studying, and with the physical examinations of some of the patients at different sanatoria and hospitals, showed to have many points of interest in common. This group represents patients who entered the various institutions from January, 11, 1925 (the first patient) to October 16, 1929, the last. As to age, the youngest was admitted at the age of 19, on November 19, 1929, and is still at the sanatorium. This patient diagnosed pulmonary tuberculosis; complication diabetes, with extensive pulmonary involvement, both upper lobes; the prognosis grave, the pulmonary lesion, active, moderately

advanced. Small doses of insulin were administered, 10 to 15 units in the morning. The oldest patient having this dual complication was 67; advanced pulmonary lesion, progressive, with cavitation. The urine always sugar free on diet alone. This patient had a slight hemoptysis, while at the sanatorium. No blood sugar estimations were made, although the patient is now at the sanatorium, July 1, 1930, since his admission on June 16, 1925.

Of the number admitted, 21 were male and 11 female patients. Hemoptysis or hemorrhages were tabulated in 6. 8 had died while under observation. 7 were discharged or refused to remain longer in the sanatorium, and 17 are still under care, treatment and observation at the various sanatoria. Here the average age is: males 40 and females 52, all in middle life.

Some complications which were observed in this group of duality should be mentioned. A diabetic retinitis was diagnosed in one case; another suffered from acute tuberculous meningitis; a third, with a double pleural effusion. One had a diabetic gangrene of the second toe, right foot; this was successfully amputated, a very good recovery. A spontaneous pneumothorax developed in one and in three, owing to hemorrhages, lung compressions were instituted.

It is also noteworthy, that the blood sugar estimations were comparatively infrequent. Only in 14 patients out of the group of 25, were blood sugar tests made, and it is also significant to note that in one instance the CO₂ determination of the blood plasma is given as 45% normal.

However, when blood sugar estimations were made they were generally made with great regularity, at some of the sanatoria; in some instances once or twice a month; in others as often as once a week, covering a period of many months, and with a regulated diet, insulin was given systematically, usually before breakfast, after a 14 hour fast, with a one-hour interval for four or five hours or, blood sugar tests, and with the administration of appropriate units of insulin after the noon luncheon, and again with the evening meal, always followed by a repeated blood sugar test. In many patients the urine was found entirely sugar free, and this was sufficient evidence that repeated blood sugar tests should be made, because a negative urine test is not sufficient to give the accurate state of the

patient's physical condition, as is evident, particularly in advancing cases, the urinary sugar test may be nearly negative and still a very dangerous hyperglycemia may be present.

Out of the 32 patients of this group, 7 did not receive insulin. In these, under a strict diabetic diet, the sugar in the urine was very much lessened. In a few cases this was followed by complete absence of glycosuria. Out of this number, a youth of 21 years, with very extensive pulmonary involvement, with diabetes, it was deemed inadvisable to institute the insulin therapy.

As to the administration of insulin in the 25 remaining cases, we found the greatest variability, whereas, one patient with extensive pulmonary tuberculosis complicated with diabetes, was given one unit of insulin three times a day, to another patient with nearly the same physical findings, 70 units were given before breakfast, before dinner and before supper, a total of 210 units daily.

Although a very great discrepancy in the care and treatment of these 32 cases of pulmonary tuberculosis and diabetes existed, the cases that came under our observation and those cases cited from the records of the proceedings of the National Tuberculosis Association, all are agreed that the diabetes above all should receive the first, the full, consideration that both the diabetic treatment and the insulin medication have no deleterious influence on the tuberculous processes. This is now fairly well established. Also, we should caution in the giving of insulin, by constantly and repeatedly making use of the blood sugar estimation per 100 CC. of blood. This will guide us in the treatment of this dual disease, guard against a hyperglycemia, and possibly against a hypoglycemia, as well. In some of the cases given in this group, in which the dietetic and rest treatment alone were in use, with the administration of insulin in suitable amounts, possibly a quicker and more lasting result would have been achieved.

The history of one of the 32 cases under observation, may at this point not be amiss. It is simply intended to show the thorough manner of the care and treatment at one of the sanatoria.

No. 4717. Mrs. M. S., aged 40, admitted January 11, 1925. Discharged May 22, 1926. Unimproved. Pulmonary tuberculosis, with a severe type of diabetes. Received, before entering this hospital 30 units of in-

sulin a day. Blood sugar, 133 mgs. per 100 CC. Extensive, involvement of both right and left upper lobes. April 24, 1926, urine sugar XXX, albumen X. On admission the patient showed a trace of acetone, and 2.26% sugar in the urine. Blood sugar 280 mgs. per 100 CC. Weight 121 pounds. On low diet for four days, the blood sugar was 133. Urine, both sugar and acetone a trace. Weight 115 pounds. Diet increased. 26 C, 21 P, 80 F. Insulin, 3 units, three times a day. This until March 13, 1926, when urine was sugar free. Blood sugar 166 Mg. per 100 CC. Now, on this diet, insulin, 3 units three times a day continued. A trace of acetone. Weight 114 pounds. Diet raised to 40 C, 25 P, 75 F. This until March 20. Insulin raised 4 units t.i.d. No sugar in the urine. Blood sugar 140 mg. per 100 CC. Trace of acetone. Weight 114 pounds. After March 20, raised diet to 20 C, 25 P, 150 F. Now a trace of sugar in the urine. Weight 113 pounds, blood sugar 160 mg. per 100 CC. Diet again raised on the 24th of March to 60 C, 25 P, 170 F. Insulin 5 units t.i.d. Urine now showed a slight trace of albumin, otherwise negative. Blood sugar 220 mgs. Insulin increased at 8 A. M. and 6 P. M. Diet raised to 65 C, 50 P, 300 F. Now, a total of 12 units of insulin in the morning, and 10 units in the afternoon. On this treatment no sugar in the urine, no acetone. Blood sugar 180 mg. per 100 CC. of blood. This appeared to be the patient's best balance, and so, with a blood sugar of 180 mgs. on this diet she was discharged. General condition improved, in spite of loss in weight. No activity in the chest.

THE TREATMENT OF DIABETES MELLITUS WHEN COMPLICATED BY PULMONARY TUBERCULOSIS

The original treatment for diabetes mellitus consisted in putting the patient on a strict diet until the urine became sugar free, then the gradual addition of carbohydrates in the form of green vegetables, a small amount of protein, in gradually increasing quantity; this to be followed by the addition of a small amount of fat. Close attention was given to the appearance of sugar in the urine and the increase or withdrawal of carbohydrates from the diet was closely studied and, finding pulmonary tuberculosis an accompanying disorder, absolute rest, with little or no exercise was instituted. This was the general treatment, but with the discovery of the new pancreatic hormone as a sovereign remedy for diabetes, the determination of the glucose tolerance in the patient became of first importance—how much glucose the human body can utilize satisfactorily. And then the Allen treatment—the fasting method. for one, two, three, or four days. This required courage. This, before the discovery of insulin, was the most rational procedure for the arrest of the diabetic process.

The Joslin way, the dietary regulation, the gradual reduction method, was then also used.

Landis (1922),² Case 3; P. G., Female, aged 16. Pulmonary tuberculosis, diabetes and syphilis (latent). Intensive arsphenamine treatment: the first indication of glycosuria, one to two per cent. Fasting, blood sugar 180 mgs. per 100 CC. In this patient, after the syphilis was controlled, a rational diet was instituted, and a diet of 125 C, 100 P, 125 F. This, with rest and quiet, the pulmonary symptoms gradually disappeared, and the urine free from sugar. This was before insulin was known as a therapeutic remedy for the control of diabetes.

This was the method of treatment then in vogue when we first considered the disorder known as diabetes mellitus, but with the association of pulmonary tuberculosis in the same individual, our views concerning the treatment changed somewhat, and the question arose, which malady should receive our immediate attention. Should we ignore the diabetes and treat the tuberculosis, or should we ignore the tuberculosis and treat the diabetes? Control the diabetes first, treat the diabetic condition first and foremost, unless the patient shows all the signs of a fatal or early terminal tuberculosis.

Sansum (1923)³ reports his observation on three patients in the last stages of the disease, with a food tolerance of 289, 935, and 1,071 calories, respectively, but following the injection of insulin, the patients became free from all diabetic symptoms. In all three cases the sputum reduced and everything showed a progressive improvement in the clinical, the roentgenologic and the laboratory findings. To summarize: the essential points of success (a) the patient must be kept free from sugar in the urine, and the blood sugar should be normal, (b) the patient should be kept continually free from acidosis, and (c) the patient should be properly nourished.

He suggests, in the use of insulin, these four conditions:

1. The sugar burning utilizing power of insulin must be determined.
2. The patient's natural tolerance should also be determined.
3. The exact value of a proper diet should be known.
4. The dosage of insulin be adjusted to make up the difference between the sugar formers of

the given diet and those of patient's natural powers.

From close observation, he states that patients suffering from tuberculosis, complicated with diabetes, have the same chance of recovery as have patients without diabetes. This, under a strict diabetic diet and treatment with insulin. His observation followed the early introduction of insulin as a therapeutic remedy.

IN ORDER TO TREAT THE DIABETIC-TUBERCULOUS PATIENT SUCCESSFULLY, THE FOLLOWING RULES AND AXIOMS SHOULD BE EARLY OBSERVED

1. The pancreatic hormone, insulin, appears to regulate the carbohydrate metabolism when injected into the diabetic.
2. Insulin, when used in the diabetic suffering from active pulmonary tuberculosis, must be used with great caution, from fear of producing a fatal hypoglycemia; as the tuberculosis progresses the glycemia disappears.
3. A clinical observation is that with an advancing pulmonary tuberculosis, the presence of sugar may become lessened, or may be entirely absent, and parallel with this an increased carbohydrate tolerance may be noticeable.
4. In cases of diabetes of long standing, a gradual rise of blood sugar is noticable; hence, in these instances, the presence of sugar in the urine may give misleading findings.
5. There is excellent evidence indicating that the tuberculous outbreak occurs more often in the diabetic showing sugar, and is more carelessly treated, than among strictly treated patients being sugar free.
6. In calculating an appropriate diet for the patient, we must observe that we do not exceed the ratio of 1.5 to 1 of fatty acids to glucose.
7. It is interesting to note that as the tuberculous process is progressing, the glycemia lessens, and just before the death of the patient, the urine may be entirely sugar free.
8. In a chronic pulmonary tuberculous individual, a diabetic complication is very infrequent, whilst a terminal tuberculous condition in diabetes is very frequently observed.
9. Diabetes, even the severest grade, may practically disappear when pulmonary tuberculosis intervenes and reaches an abnormal type.
10. Severe acidosis will be found to develop

rarely in the presence of active pulmonary tuberculosis.

Caution. An extended medical treatment or surgical interference should not be attempted on a severe diabetic, without a full knowledge of the blood sugar estimation, and also determining the alkali reserve of the body to the CO_2 extraction.

In every case of advanced pulmonary tuberculosis accompanied by diabetes, the use of insulin is justifiable, but caution must be exercised if the disease is accompanied by fever, due to a spreading of the tuberculous process. This development of new tuberculous areas in the lungs may lead to a spontaneous carbohydrate tolerance. In that event, the use of insulin may lead to great damage, producing, with its constant use, a hypoglycemia.

The question of an insulin-like hormone being produced in pathologic tissue. Lundberg⁹ in an elaborate and exhaustive paper from the Research Laboratory of Prof. Jacobaeus, attempts to offer proof that not only the tuberculous granulation tissue, but many other pathologic processes give off insulin-like substances. He states that the hypotheses have been advanced, which he attempts to prove, "that an extended tuberculous affection of the lungs may produce an insulin-like substance, which may find ready entrance into the blood stream; hence the question—Does the pulmonary tuberculous process exert a favorable influence on the diabetic condition? The proof of this would be, if it were possible to produce an insulin-like product from tuberculous granulation tissue. We produced from tuberculous granulation tissue, an extract possessing insulin-like properties, possessing the property of producing a carbohydrate change, dissociation or metabolism—this we named Parainsulin. However, no insulin-like reaction has been observed from an extract obtained from either the tubercle bacillus, or from tuberculin, but an insulin-like substance has been extracted from tuberculous granulation tissue. This, like insulin, produces a high sugar tolerance. This insulinoid body produces in the diabetic a sugar reduction; the property of lessening the sugar content of the blood, a hypoglycemia."

"It became evident that the tuberculous granulation tissue in the body causes a disturbance in the carbohydrate change similar to the action of insulin. When we disregard the blood sugar increase, we find the symptoms of an insulin intoxication (poisoning), hence, diabetic patients may become hyper-sensitive to insulin, because an insulin-like product is given off in the lung, passing into the blood stream. In such patients, the sugar or acetone may entirely disappear from the urine, and with a rapid pulmonary disease, the increased sensitization of the patient toward insulin may increase. Further, we must assume that in this granulation tissue

of the tuberculous, as well as in tumor tissue, a product is brought about under carbohydrate change or metabolism and continues to develop; and then it may be also assumed that substances like insulin or substances which stimulate the production of insulin in the body, are thrown into the blood stream from sarcomatous growths."

According to Naunyn, a carbohydrate disturbance, not only from pulmonary tuberculosis, but also tabes, carcinoma, and other tumor tissues, may favorably influence the diabetic process. In cachectic diseases, there was also a lessening of the sugar output observed.

Joslin states⁶ that in a case of diabetes, the diagnosis of tuberculosis was suspected, because the patient's tolerance for glucose was gradually improving. The most severe case of diabetes may well disappear if an active and progressive tuberculous process is an accompaniment, due to the parainsulin body. Diabetes, even of the severest grade, may practically disappear when tuberculosis intervenes and reaches an advanced stage. Many clinicians have observed such instances; hence an unexplained improvement in the tolerance of the diabetic for carbohydrates should always awaken suspicion, and the question arises: Is parainsulin or insulinoid a specific product?

Clinical observation has confirmed that a carbohydrate tolerance in the diabetic is often improved when an active pulmonary tuberculous process is a concomitant disorder. This cannot be explained by a pancreatic functioning as producing more pancreatic insulin, nor by the symptoms of profuse sweating, tachycardia, or a reduced blood pressure, etc. Is it not evident that just these are the symptoms generally met with in tuberculosis? Are these symptoms in the tuberculous not an expression of intoxication, per se, an expression of the extra insulin upbuilding in the tuberculous granulation tissue of the pulmonary tuberculous individual? Mention should be made here of the fact that tuberculous individuals are not constantly annoyed by low blood pressure. This may be expected from the produced extract of the tuberculous granulation tissue. This also may be explained by assuming that this tissue produces an accessory insulin-like substance similar to the insulin of the pancreas. There must exist a carbohydrate changing or splitting power in the tuberculous

granulation tissue. In a tuberculous, in which the process is much advanced, and in which the parainsulin product is in process of development, the symptoms may correspond with that of the sympathetic nervous system, agreeing with a typical hyperinsulinism. It may be that while active tuberculous tissue destruction is taking place, that in the underlying adjacent tissue, a product simulating the hormone producing carbohydrate metabolism is found. This product must be accepted as an insulin-like substance, insulinoid, isolated from tuberculosis tissue, but can not be extracted from the tubercle bacillus, nor from tuberculin. It has been observed that tumors developing in a diabetic show a more malignant tendency. This is manifest by more rapid growth, infiltration of the surrounding tissue, and an early cachexia. In a recent publication Bordley, August, 1930, refers to the disappearance of diabetes mellitus in a case of long standing portal cirrhosis of the liver, coming under his observation, in which the mellitus cleared up without any assignable cause. From the observations of Naunyn, Lundberg and others, we may assume that the carcinomatous tumor mass produced a hormone like substance simulating insulin, this increased the carbohydrate tolerance, which exerted an ameliorating effect on the diabetes.

CONCLUSIONS

It is now generally agreed that diabetes predisposes the incipency and development of pulmonary tuberculosis, but on the other hand, in a number of cases an association of these two diseases, an improvement, even cures, have been observed of the diabetic condition—an improved metabolism, this, however, with a further development and activation of the tuberculous process.

The greater majority of diabetic individuals do not become tuberculous, but those in whom tuberculous disease as a complication is present, usually show a very severe type of tuberculosis.

It has frequently been observed, in a progressive tuberculous process in a diabetic, that the glycosuria lessens and disappears entirely at the time of the patient's death.

A diabetes, in the course of chronic pulmonary tuberculosis, is infrequent, but a final phthisis in a diabetic has been frequently observed. The

clinical observation has shown that with a progressing of the phthisical process, the glucose in the urine may have lessened or disappeared entirely.

It is not necessary that the diabetic is suffering from a high grade diabetes to become tuberculous, but if the diabetic does become tuberculous it is usually of a severe, grave form of the disease leading to speedy death. However, as the tuberculosis progresses the sugar tolerance increases, and there may not be any lessening of body weight.

A few decades ago Nathan Raw⁵ reaffirmed from personal observation that diabetes greatly favors the growth of the tubercle bacillus; whereas gout seems to inhibit this growth. He states that it is well known that diabetes, as a complication in tuberculosis, favors the destructive process, but tuberculosis does not predispose to diabetes. In considering either diabetes or gout, the blood plasma appears to be of prime importance; evidenced by the fact that if to a culture of the human bacillus blood of a gouty individual is added, a perceptible lessening, a slowing of the bacillary growth can be observed; whereas, to a similar culture, if the blood from a diabetic person is added, there will be observed a more rapid growth, a greater increase in the number of colonies.

In practically all cases the diabetes was the primary disorder, in which the tuberculous process subsequently developed; the presence of sugar in the tissue producing a more favorable soil upon which the tubercle bacillus can flourish most luxuriantly.

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2370 S. W. 23rd Terrace.

CONGENITAL DACRYOCYSTITIS*

HARRY W. WOODRUFF, M. D.

JOLIET, ILL.

Occasionally one sees cases of dacryocystitis in young children and infants, sometimes in older children, the etiology of which probably goes back to some congenital malformation. I wish to emphasize that if these cases are taken in hand early enough they are so simple to deal with that there is little excuse for their becoming what I might designate as seriously chronic. In the previous paper on embryology there was one slide showing the outer wall of the nasal cavity in the infant at birth. I have a picture from Collins and Mayo's Pathology, showing a similar view, but also indicating the point of beginning of the nasal duct, that is the ocular end and also the nasal end, and this shows that the direction of the duct at that time is quite different than it is later.

There are five fissures in the face of the human embryo at the fourth week, radiating from the oral cavity. The upper pair, the frontonasal, give origin in their middle part to the lacrimal canals—at first a strand of cells without any lumen. The lumen forms first in the upper part and last at the inferior meatus.

This part becomes patent at term or even later. Atresia at this point is the most common form of malformation of the lacrimal apparatus. It is due either to failure of union between the column of epithelium of the duct with the epithelium of the nasal mucous membrane, or imperfect canalization of the column of epithelium which forms the duct.

Before birth the nose and lacrimal ducts are filled with epithelial debris, which is normally cleared away by aspiration. Occasionally, however, this plug may remain impacted in the nasal end of the duct. That is the most frequent form of congenital dacryocystitis—the remains of epithelial debris. How many cases recover without any interference I am not prepared to say—I have never known definitely of such cases.

In my records, I have the histories of a number of cases occurring back through a number of years, which show the age of the infant at the time the first visit was made to the eye doctor. One came in at four months of age, another at nine months, another at fourteen months; there are records at three, at five and two months, one at six weeks of age, and fourteen months seems to have been the oldest. The average is about six and one-half months. Just how long these cases would continue, or whether they would recover spontaneously or not, I am not certain. Most of these cases had been treated by boric wash and of course argyrol. Such treatment is not particularly detrimental, but is of course useless so far as getting at the etiological factor.

I have here an infant's skull, which will give you some idea of the shortness of the lacrimal canal, about 5 or 6 mm. in length from the lacrimal fossa to the floor of the nose.

I have handled these cases something in this manner. The baby is brought in with a history such as I have indicated; has been treated by argyrol, boric solution; there is a continual secretion of pus. You can almost make the diagnosis without definite examination, but of course to be certain you make pressure over the lacrimal sac. The puncta are small, and I am in the habit of using a little magnification so that I may see the line of pus come out of the puncta. You can treat these cases with or without anesthesia, although it is more comfortable to have them asleep. A large number require no other treat-

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ment than dilating the puncta with the lacrimal dilator and washing the sac.

You must watch the infant to see whether he makes a gasp for breath and swallows. There will be a regurgitation of fluid if it does not go into the throat. The passage of a Bowman probe will in most cases cure the case, but rarely it will not. Then it is necessary to pass the probe down into the nose, then with an ear speculum in the nasal cavity, pass another probe into the end of the duct, perhaps making a little rubbing to break through. In some cases I have explained the difficulty in rupturing the membrane as due to the fact that the duct is so short that the probe simply pushes the membrane against the floor of the nose. Of course that is as far as you can go. If you have counter pressure with a probe you can rupture the membrane.

DISCUSSION

Dr. O. B. Nugent, Chicago: Nowadays the laity understand the danger of pus exuding from the eye, and become very apprehensive as to whether it might be a case of ophthalmia neonatorum, therefore the doctor often has a chance to see these cases early, as soon as they start. However, they are not commonly seen so early in life as we find it in neonatorum. The cause of such a condition is likely to be as Dr. Woodruff mentioned, not the lack of a canal opening, but a plug, perhaps by the mucus which forms in the lower end of the nasal duct. Some of these ducts do not open, and some have caused a blind cul de sac in which bacteria can form. Of course when they are opened drainage takes place and the sac immediately becomes normal. Some deformities of the lacrimal system are noted and perhaps they may be classed as a deformity or lack of a patent canal.

Two months ago I demonstrated a case to the Chicago Ophthalmological Society in which there was a lack of proper position of the puncta, on the lower lid of each eye, being 2 mm. from the lacrimal papilla, and in the upper $1\frac{1}{2}$ mm. In a case of this sort there is no possibility of tears being carried through the sac, and if there was any stoppage of the canal the sac would not be cleansed with tears and infection would take place. This patient, eighteen years of age, had no history of any trouble, though the condition had always been present. The diagnosis should be made, as Dr. Woodruff said, by demonstration of pus that might be squeezed out of the puncta from the sac, and opened early.

Dr. George Francis Suker, Chicago: I think this is a very interesting question, and Dr. Woodruff is to be complimented on his presentation. I wish to endorse everything he said. The passage of a probe in these cases should always be under more or less pressure, and should be accompanied by a sound into the nasal passage in order to feel the free end of

lacrimal probe. For a probe I use a small gauged silver tube and can thus irrigate through, that is, I can see that the membranous end in the nasal duct has been perforated as the fluid comes out of the nose. I leave the tube in for twenty-four or forty-eight hours and then withdraw it. This insures the retraction of the membrane. If it is just a concretion, it is not necessary to leave the probe in for more than several minutes. But, as you cannot tell always which type of occlusion it is, the safer plan is to have the probe in situ for 24 or 48 hours.

The confounding of this condition with gonorrheal ophthalmia is just one of carelessness on the part of the physician. There is no excuse for that. However, there is one thing that is rather unusual in these youngsters. The majority are unilateral. I have seen only a few in all I have seen at Cook County Hospital that were bilateral. I agree that treatment with passage of probe is illogical and simply adds insult to injury.

Dr. W. R. Fringer, Rockford: My data on these cases is rather indefinite. Some years ago Dr. Crigler of New York wrote an article on this condition, and he advocated letting the secretion accumulate. Then when the child is brought to you, put your thumb over the puncta and squeeze the mucus into the nasal duct and as the membrane at the end of the duct is thin, it goes through. I have recently had three cases. In one I felt the membrane give way, and that was all that was necessary. The other was a very young child, not over one month of age, and got well. The third has not done so well.

Dr. Harry Gradle, Chicago: With all due respect to Dr. Woodruff's inches and years, I cannot agree with him. In the embryo the tear passages are not one continuous strand, but are an invagination of epithelium arising from the conjunctival sac immediately above the coruncle proceeding to the nose, bending downward, and also from the nasal end, proceeding upward. It does join together at the lower end of the nasal sac proper, and in the normal case the lumen is established. In some cases the lumen is not established, and there remains a row of cells, four to eight cells thick, which excludes the sac. In those cases all the pressure in the world will do no good. It is necessary to do it mechanically. In some cases the lower end is excluded by debris or what you wish, and in such cases fluid under pressure will clear them up.

I do not think it is correct to speak of dacryocystitis in the sense of a bacterial invasion—it is a misnomer. We have a cul de sac in which the tears accumulate by force of gravity, and that causes maceration of the surface of the lining of the sac. The tears are sterile. The pus is composed of epithelial cells and a few leucocytes as a result of inflammatory reaction. The treatment is to perforate the membrane. I cannot see the necessity for leaving a probe of any kind or any similar device in the sac after it has once been perforated.

Dr. Harry Woodruff, Joliet (closing): I am pleased

that such a simple subject as this should elicit so much discussion. I have only rarely found it necessary to make counter-pressure as Dr. Suker does, never to the point of advising it in nearly all cases, and I also do not see the necessity of leaving a cannula in place for any length of time at all. Some of these cases have been thought of as being gonorrheal, but of course the clinical symptoms and the microscopic examination of the secretion soon clears up that point. I have seen a number of cases that were bilateral; not many, but a few. I have never seen any bad results from the use of argyrol, but I have often thought that with argyrol being used so much at home, in these cases it might easily produce an argyrosis. However, most mothers are so anxious about their infants that they would not go more than a year or so without seeking advice from an oculist.

I think it is possible to cure some of these cases by pressure, as has been referred to, but these sacs do not puff up and collapse as they do in adults, so that you do not have much to press upon.

Regarding the embryology, I can only say that my authorities have been Collins and Mayo, and that description has been most gratifying to me as to how these defects come about. When you take into consideration that the cases are seen at an average age of six months after birth, you can hardly conceive of these secretions remaining sterile. They certainly contain bacteria and plenty of them.

TREATMENT OF FISSURE IN ANO

CHARLES J. DRUECK, M. D., F. A. C. S.
CHICAGO

Every fissure should be dealt with promptly and thoroughly not only for the immediate relief from suffering but to avoid the possibility of septic infection spreading to the perirectal fossa and thus originating a perirectal abscess or fistula. Therefore, even if the fissure is due to some constitutional disease, a local as well as general treatment is required, but the underlying syphilis, tuberculosis, polypus, hemorrhoid or proctitis will demand its own attention. In the case of infants and children only mildly astringent and soothing applications can be made.

Two general principles govern the treatment of fissure: 1. rest; 2, drainage.

Opiates and sedatives increase constipation, thereby increasing the trauma and pain and are to be interdicted. Constipation must be relieved and the stools kept mushy or soluble.

Palliative Treatment. Laxatives are to be used very guardedly. Salines produce very irritating liquid stools and resinous cathartics like podophyllin and aloes, are also objectionable be-

cause of their effect on the colon. The old fashioned remedy of sulphur and cream of tartar or the more modern remedy of phenolphthalein may serve well in selected cases. Before each defecation the patient should take an enema of an ounce of olive oil or glycerine, using a soft rubber ear syringe, to soften the fecal mass and assist in its easy evacuation.

Following defecation and also night and morning, the patient should sit in a hot sitz bath, and

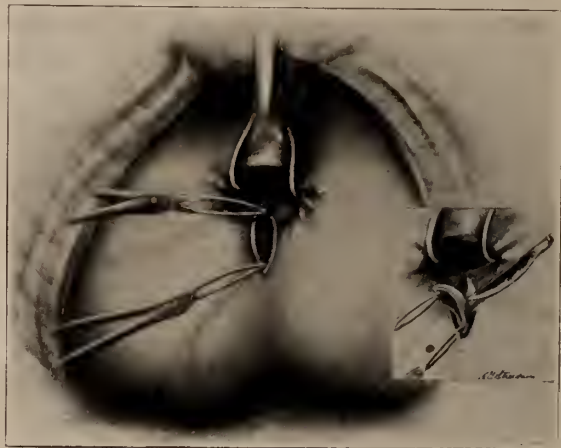


Fig. 1. Excision of the Fissure.

cleanse the anus with cotton swabs that any irritating substance in the fissure may be washed out. The parts should then be dried, and a mild dusting powder and a piece of gauze placed between the buttocks that any secretion may be absorbed. A short rest may be necessary following the defecation to relieve the patient from exhaustive suffering but usually he will be able to attend to business until the next bowel movement.

The diet must be arranged so as to exclude articles that leave much residue or produce hard, packed stools.

Some very recent cases without apparent deep infection are too painful for the above mentioned manipulations but respond to the deep injection of a local anesthetic which relaxes the sphincter for several days. The greatest single factor in preventing spontaneous healing of an anal fissure is this sphincteric tenesmus. Therefore, our treatment must include relaxing this muscle sufficiently long to allow the lesion to heal.

The injection of anesthetics was suggested by Dr. Graham several years ago. No preparation on the part of the patient is needed. The circum-

anal skin is sterilized and ten to fifteen drops of a 5 per cent. solution of quinine and urea hydrochloride is injected directly into the sphincter muscle under the fissure. The point for injection is just below the proximal end of the fissure. Rather severe pain is experienced by the patient for a few seconds but anesthesia is complete by the time the injection is completed. The whole procedure should not consume over thirty seconds.

At the meeting of the American Proctologic Society in 1927, Dr. Graham reported 128 cases treated by this method with immediate and complete relief in 98. Twelve patients reported a return of symptoms in from six weeks to three months following the treatment. A second treatment was given to these patients with a result that a cure was effected in 8. This method is devoid of all danger if properly used. Extreme care must be taken not to inject the strong solution into the skin as a slough would surely result. The anesthetic effect is so pronounced and so prolonged that no anodynes are needed and the patient resumes his occupation at once. The sphincter stays relaxed for a sufficient period to allow the fissure to heal.

Recent fissures, before the wound edges are thickened or undermined and before pus burrowing has occurred, can generally be cured without having to resort to operation, but a good deal depends upon the patient and upon the severity of the symptoms.

The first thing to do is to make sure that the bowels act easily with a soft stool by giving chimaline, grs. 10, or mineral oil, one-half ounce, after each meal. After each bowel movement the patient should sit in a hot sitz bath for fifteen minutes and carefully but thoroughly wash the parts with soap. Because of the favorable results obtained in recent years by the use of soaps and soap solutions as antiseptics, Renaud¹ conducted a series of experiments to determine their value. Using solutions of sodium oleate, he sometimes washed ulcerated surfaces with a 2 per cent. solution, sometimes covered them with compresses of the same solution and sometimes covered the tissues with a soft ointment, obtained by the addition of electrolytes to concentrated solutions. The results were excellent. Not only did the solution have a marked curative effect on necrotic and fetid tissues, but true cicatrization was often observed. Especially noteworthy results were

observed in the treatment of ulcerations of the genitalia. The author is convinced, therefore, that because of their extreme fluidity as a result of which they reach and collect all the finest particles and because of their harmless effect on the tissues, soap solutions are destined to become the most efficacious of antiseptics.

After this cleansing, if the pain still continues he should lie down prone and apply the following sedative:

R Calomeldr. 4
Ext. Stramoniigr. 3
Ung Hydrastaloz. 1

This should be applied with a cotton swab before and after each bowel movement and before retiring at night. A patient with an acute fissure should not walk about much, but keep as quiet as possible until it has healed.

Each day, at the office, the patient is placed in the left lateral prone position, a conical fenestrated speculum is carefully inserted with the shutter over the fissure, the shutter is withdrawn and the speculum adjusted to bring the fissure well into view. Any particles of foreign matter, feces and thin gray or yellowish secretion so often covering the ulcer must be gently removed with swabs dipped in warm normal salt solution. The surface is then carefully dried and lightly painted with equal parts of balsam of Peru and castor oil. Sometimes this occasions a spasm of the sphincter for a time after the treatment, but this may be avoided by smearing the field promptly with stramonium and hydrastal ointment above mentioned before the patient leaves the table.

A cure should be accomplished by this course in two or three weeks. After the pain is relieved the patient should be watched to make sure that the fissure has really healed. If relief is not obtained within this time the fissure should be treated surgically.

OPERATIVE TREATMENT

1. Cauterization.
2. Excision.

Cauterization. When the pain is very acute and the parts are exceedingly tender, it may be impossible to make the soothing applications mentioned above and therefore palliative treatment cannot be effective.

With gentleness and persistence the nates can

be separated carefully and slowly until the fissure is exposed. In women a finger can be introduced into the vagina and the rectum above the external sphincter pushed down until enough everts through the anus to expose the fissure. A small swab of 4 per cent. cocaine is applied to the ulcer and the swab held in place while the parts are released and left at repose. This manipulation occasions some discomfort and ten or fifteen minutes are necessary to develop full anesthesia. Having assured ourselves, by gentle probing, that the entire ulcer and its walls are anesthetized, a cotton-tipped probe, tightly twisted, is dipped into pure phenol, liquified by heat, and the acid permitted to crystallize on the cotton. The entire floor and sides are thoroughly cauterized until the whole surface turns white, being careful that the acid does not touch any surface that it is not intended to cauterize. A similar tipped probe is now dipped into dilute alcohol, and the outer edges of the fissure are swabbed off. This limits the phenol to the parts to which it was applied.

Excision. When the sphincters are hypertrophied, the wound edges swollen, or the sentinel pile present, nothing short of surgical removal of the ulcer and its associated pathology will be successful. Depending upon the temperament of the patient, a local or general anesthetic may be preferred, the majority of our cases are operated on under infiltration anesthesia, those with spastic sphincters under sacral block, and only a few are handled under gas anesthesia. After our patient is properly prepared the fissure is grasped at its upper extremity with a toothed forceps. Longitudinal incisions beginning above the fissure are made on either side of it; each incision slanting inward until it meets its fellow beneath the ulcer, making a V-shaped wound (Fig. 1.), the two incisions uniting again externally below the fissure. At its upper limit the incision is superficial and involves only the mucous membrane, but at the lower border or skin terminus the incisions are a half inch in width and carried to nearly an equal depth. By this technic the base of the fissure is removed deep enough to expose the muscle wall and the outer end of the wound extends well out onto the skin to facilitate drainage.

The sentinel pile, if present, is included in the parts cut away, and also any papilla or small polypoid growths at the upper end of the fissure,

which might fall into the rent and hold the wound apart.

A small branch of the inferior hemorrhoidal vein is frequently divided during the excision, but it is seldom necessary to ligate it. Firm pressure with a hot compress soon checks the hemorrhage.

Sinuses burrowing under the mucous membrane exist in many cases of fissure and must be sought for with a probe—every slight variation from the usual appearance of the base or edges of the wound must be carefully explored with the probe. Sometimes they are quite superficial and at other times they are found in the floor of ulcer. Later, as healing progresses, any sluggish patches are to be carefully explored and a sinus will usually be found leading from them. Whenever these channels are found they are incised their whole length.

Swollen or inflamed anal folds coexisting with the fissure should be incised and probed, and if a channel is found it should be widely opened at once.

Unless all of these tumors and sinuses are properly removed and all redundant skin is removed from about the fissure a failure to cure will result.

Some surgeons recommend dividing the anal sphincter, but this, we feel, is a mistake, as there is no necessity for such a procedure and doing so may easily result in serious damage.

In cases of long standing where the sphincter is hypertrophied it will need divulsion by a careful and thorough kneading. With one or more fingers gently introduced the entire circumference of the bowel may be massaged until the sphincters finally will be quite soft and pliable and all adhesions are broken up. If a general anesthetic is administered I prefer nitrous oxid gas and oxygen. Under this anesthetic there is not the muscular relaxation of ether or chloroform anesthesia, so that the operator is better able to determine the force and time required to satisfactorily dilate the sphincters.

Technic of Dilatation. Divulsion of the sphincters, literally interpreted, means to "tear or rend asunder"—and that is what usually occurs when the patient is chloroformed and the muscles are stretched by thrusting the thumbs through the anal sphincter and dragging them sideways until they touch the ischial tuberosities. But such

brutal traumatism is unnecessary. What we wish to accomplish is simply to overcome the exaggerated contractility of the sphincter.

One index finger or a thumb is introduced through the anus and slowly but firmly rolled round and round, thus massaging the irritated fibers, until they soften. Two fingers are then introduced and the procedure further continued until the whole sphincter muscle is flabby and pulplike. This requires, perhaps, ten minutes treatment. Do not hurry the work. Sometimes very gentle manipulating will suffice, and sometimes firm pressure is needed. The mucous membrane must not be torn nor any bleeding produced, although extravasation of blood into the cellular tissues about the anus may occur.

Dilatation should never be carried to the degree of divulsion which endangers paralysis, but only sufficiently to break up the adhesions that have formed about and beneath the ulcer and to re-establish free circulation in the tissues, restoring normal elasticity and expansibility and preventing the constant or spasmodic contractions. During the dilatation the sphincter muscle should be thoroughly massaged and manipulated between the fingers.

When but a moderate degree of dilatation is required it may be performed under local anesthesia and by careful preparation of selected cases considerable dilatation may be accomplished. Not all patients are of suitable temperament for such manipulation and a general anesthesia is often required.

In the case of children this same plan is carried out in a little different manner. The nurse dilates the sphincter by putting a rubber finger cot on her little finger and after anointing it well with the soothing ointment above mentioned, carefully inserts it into the bowel, going up a little higher each day. If the pain is too severe the fissure should be touched with cocaine solution. Following this treatment the soothing ointment should be applied about the fissure externally.

After Treatment. The whole wound is now well anointed with heavy petrolatum and the wound packed with parafined gauze laid in narrow layers. A light anal dressing with perineal support concludes the dressings. Each day the gauze packing is removed. This removal is painless, quite a contrast to a dry gauze packing

which becomes filled with granulations and blood clots. As the gauze is removed the wound is flushed well with saline solution or water and these flushings are repeated once each day and also following each bowel movement, until the field is completely healed, which requires about three weeks. During these dressings the edges must be carefully separated by the attendant pulling the buttocks apart while narrow strips of vaselined gauze are placed between the wound edges. The whole wound is exposed at each dressing and regeneration develops from the base. Particular attention must be given to the upper limit of the wound and also the lower outlet that perfect drainage may be provided.

The patient should not be allowed to be about until the wound has completely healed, and care should be taken to keep the stools free for a considerable time thereafter.

By this procedure the cure is absolute and the relief of pain is practically immediate. There is some burning pain from the cut wound, but it is trivial in comparison to that due to the fissure, and it soon passes away.

It is advisable, although not necessary, that the patient keep his bed for a day or two after the operation. His bowels are easily confined for two or three days by keeping him on a liquid and absorbable diet.

On the evening before the bowels are to be emptied the first time he is given a level teaspoonful of compound licorice powder and early the next morning he is given, through a soft rubber catheter, an enema of 8 ounces of soap suds or mineral oil.

The evacuations are thereafter kept free and the movements soft, and after each defecation the patient should take a warm antiseptic sitz bath. There may be a temporary incontinence following this operation, but this disappears as the wound heals. When the fissure has existed continuously for several months, or when it has been operated upon and has not healed properly the possibility of syphilis will call for a blood examination, and also tuberculous, anemic or rheumatic factors must not be overlooked.

Irritable ulcer at the anus associated with catarrhal inflammation within the rectum is obviously not amenable to operation but demands treatment of the underlying cause. Local irrigations of 20 per cent. solution of krameria will

give much relief in these cases by relieving the irritating mucous discharged.

There are many factors besides the ulcer itself that require attention at the operation and during the after treatment. There has been a long train of local disease leading up to the development of the fissure and these factors must be remedied. The patient is very apt to neglect himself as soon as his painful symptoms are relieved, but the physician must impress upon him the serious nature of the disease and the importance of the continued treatment for the required length of time.

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EMBRYOLOGICAL DEVELOPMENT OF THE NASAL ACCESSORY SINUSES. LANTERN DEMONSTRATION*

W. L. HANSON, M. D.

EAST ST. LOUIS

According to J. Parsons Schaeffer the proton or rudiment of the nose and the olfactory organ is a paired convex area of the cranial ectoderm located near the closed anterior neuropore. It is seen as a thickening of the sensory epithelium in this area.

The epithelium of the olfactory placodes (Kupffer) is seen in the third week of embryonal life (4-5mm.) These placodes are situated bilaterally on the wall of the forebrain cephalic to the primitive oral fossa.

The lateral wall of the nasal fossa of a 35 day

*Read before the Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, East St. Louis, May 5, 1931.

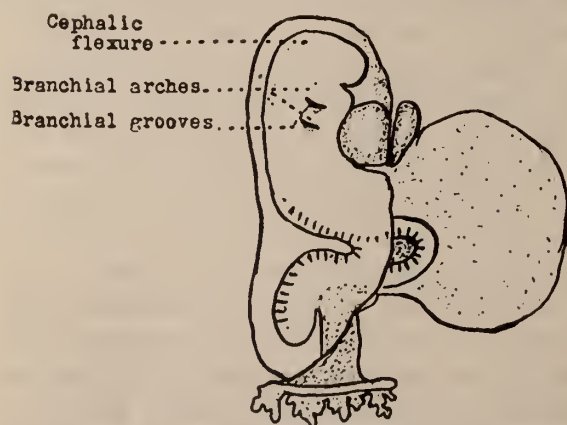


Fig. 1. Human embryo 2.15 mm. long. (His. Fig. 122)

embryo shows no evidence of its later complexity.

The turbinates of the nose arise on both the lateral and medial walls of the nasal fossa but by a process of unequal growth the ethmoidal turbinates are transferred entirely to the lateral nasal wall.

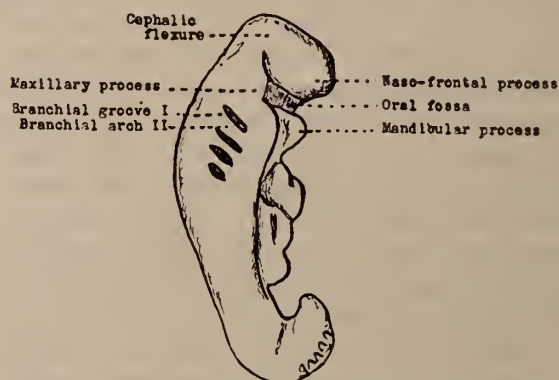


Fig. 2. Human embryo of the third week. His. (Bailey & Miller, Fig. 122)

Serial sections of 40 day embryos show the lateral wall of the middle meatus even and unbroken but in embryos of 40 to 60 days this region presents a crescentic shaped fold. This fold is the rudiment of the uncinat process. The development of the uncinat process forms a furrow superior to it known as the primitive *infundibulum ethmoidale*.

THE MAXILLARY SINUS

The maxillary sinus primitively as described by Schaeffer is an evagination of the mucous membrane of the floor or lateral wall of the *infundibulum ethmoidale*. It is evident at 70th day and usually is a single pouch. At times the early sinus occupies the greater portion of the *infundibulum* and it is difficult to separate them. The doubling of the primitive maxillary-sinus pouch may explain some of the rare double adult maxillary sinuses, each with an independent ostium in communication with the ethmoidal *infundibulum*, i. e., each evaginating sac developing independent of its mate.

The early maxillary sinus is for a time a slit like cavity in the membranous lateral wall of the nose. It extends inferiorly into the recess formed by the union of the lateral cartilaginous plate with that of the inferior nasal conchae. By resorption of the cartilaginous nasal capsule intervening between the maxilla and the develop-

ing maxillary sinus sac the latter ultimately comes into contact with the maxilla. It is largest ventro dorsal direction while medio laterally it occupies little space.

THE FRONTAL SINUS

The nasofrontal region is genetically an outgrowth from the ventral and cephalic end of the middle nasal conchae. The mucosa of this part



Fig. 3. Section through the head of a human embryo aged approximately three weeks. The section shows the olfactory placodes sharply delimited from the surrounding head ectoblast. (Redrawn from Kollmann.) (Shaeffer, Fig. 1)

of the middle meatus is, therefore, the proton of what subsequently becomes the recessus frontalis of the middle nasal meatus. The recessus frontalis in turn is the rudiment of the sinus frontalis and certain of the anterior group of the cellulae ethmoidales. As early as the end of the 3rd month of embryonic life one sees evidence of a beginning extension of the middle nasal meatus in a ventro cephalic direction. This is the beginning of the sinus frontalis.

For some time the lateral wall of the recessus frontalis is even and unbroken and gives no evidence of the later complexity which characterizes this region. Coronal sections and transections

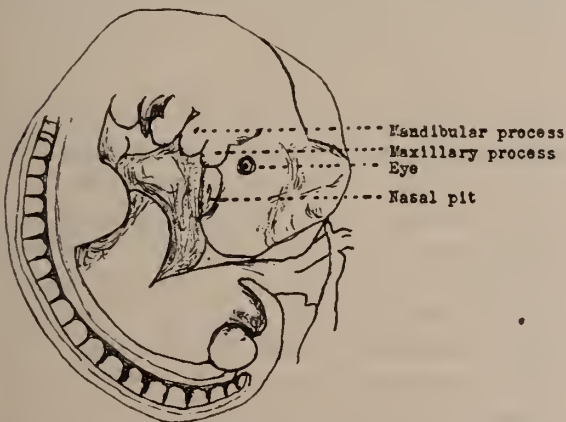


Fig. 4. Human embryo with twenty-seven pairs of primitive segments (7 mm., 26 days.) Mall. (Bailey and Miller, Fig. 123)

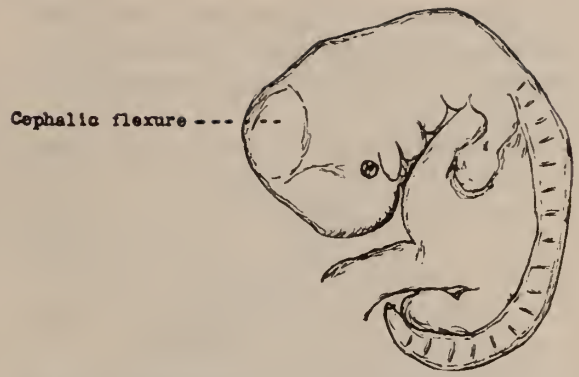


Fig. 5. Human embryo 11 mm. long (31-34 days). His. (Bailey and Miller, Fig. 125)

of the recessus frontalis of a 4-month fetus show the lateral nasal plate of cartilage thickened at certain points. These thickened cartilaginous areas—the precursors of the folds or accessory conchae which later configure the lateral wall of the recessus frontalis—vary in number and are for a period low and inconspicuous and do not throw the nasal mucosa into relief.

Upon examining the recessus frontalis in the late fetus, one finds a variable number of low

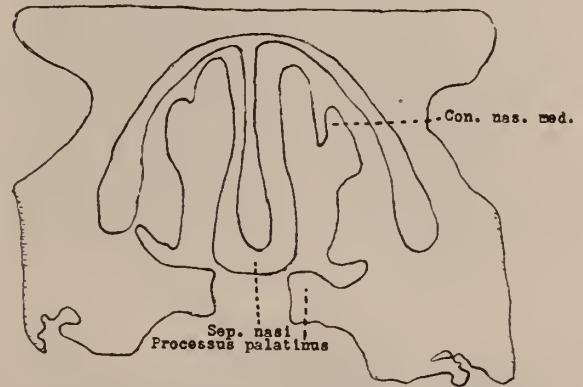


Fig. 6. Frontal section through the nasal fossae of a human embryo aged 49 days. (Embryo 12 H.) Especially note that the palatal processes have assumed a horizontal direction in anticipation of the completion of the definitive palate. Moreover, note that the nasal conchae do not have cartilage in them at this time. x28. (Schaeffer, Fig. 16)

accessory conchae on its lateral wall. The folds, with the cartilaginous skeleton now partly ossified, are at this time sufficiently developed to throw the nasal mucosa into relief. Between the folds are found pits or furrows, the positive growth or outpouching of which aids materially in making more prominent the folds. It is appropriate to speak of the latter as accessory or hidden frontal folds or conchae and the pits as frontal furrows of the middle nasal meatus.

In some instances, therefore, the recessus frontalis remains a simple blind outgrowth from the middle nasal meatus without configuration of its lateral wall.

The processus uncinatus and the folds com-

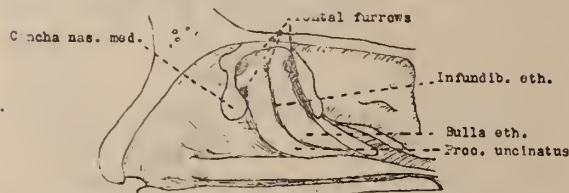


Fig. 7. A dissection of the frontal recess of a term fetus showing the early frontal furrows; e. g., rudiments of anterior ethmoidal cells and potential rudiments of the frontal sinus. Particularly, note the relations of the infundibulum ethmoidale. x1.5 (Schaeffer, Fig. 36)

posing the bulla ethmoidalis should likewise, as previously stated, be considered accessory conchae of the middle nasal meatus, and the infundibulum ethmoidale and the suprabullar furrow as accessory meatuses or furrows of the middle nasal meatus.

The frontal furrows or pits early evaginate and form certain of the anterior group of ethmoidal cells or the so-called frontal cells. When the latter cells are followed in serial sections toward the recessus frontalis, they are shown to be extensions or outpouchings of the frontal furrows and in communications with the recess. Some of the ethmoidal cells having their genesis in frontal pits remain diminutive and ethmoidal in topography, while others grow to considerable

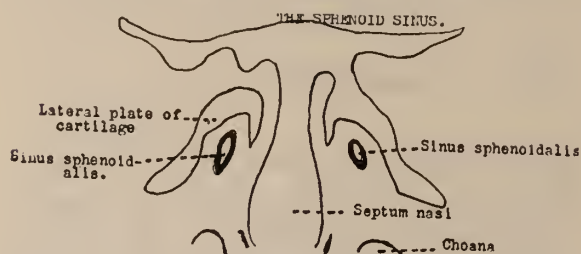


Fig. 8. Outline drawing of a frontal section through the dorsal portion of the nasal cavity. x10. Human embryo, aged 120 days. (Schaeffer, Fig. 131)

size and often develop beyond the confines of the ethmoid bone.

It is a well-established fact that the frontal sinus develops variously: 1. by a direct extension of the whole recessus frontalis, 2. from one or more of the anterior group of cellulæ ethmoidales which have their point of origin in frontal furrows, and 3. occasionally from the ventral extremity of the infundibulum ethmoidale, either

by direct extension or from one of its cellular outgrowths. Indeed, the frontal sinus is frequently unilaterally or bilaterally present in duplicate or triplicate, indicating a genesis from more than one of the aforementioned areas. The frontal sinus is, embryologically speaking, in many instances, an anterior ethmoidal cell which has grown sufficiently far into the frontal region to be topographically a frontal sinus.

In a general way one may say that when the frontal sinus develops from an anterior ethmoidal cell, the adult cavity will more frequently have a nasofrontal duct—the tortuosity of the

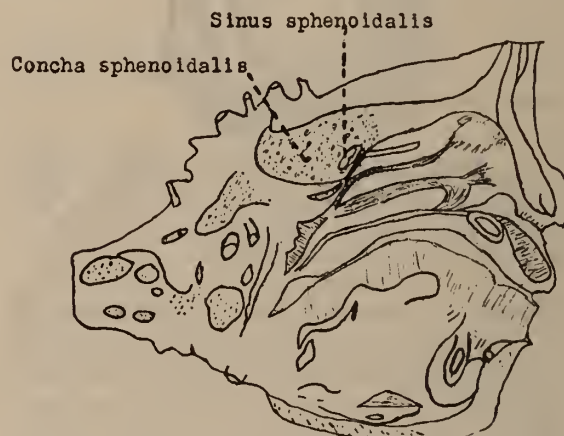


Fig. 9. A sagittal section through the sphenoidal sinus of a child aged 18 months. Particularly note that the sphenoidal sinus does not occupy any portion of the sphenoid bone proper at this age, but is distinctly related to the sphenoidal conchae. x0.9. (Schaeffer, Fig. 132)

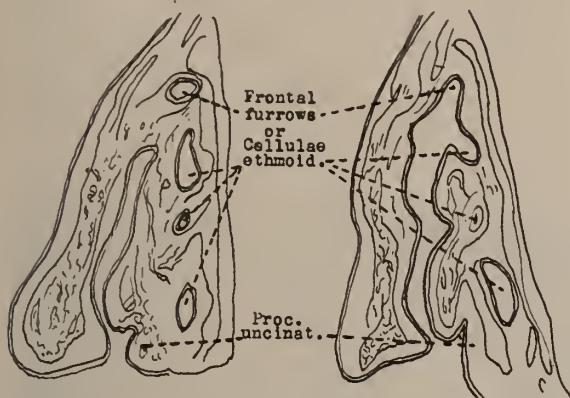
duct depending upon the cell from which the sinus developed and upon the degree of development and disposition of the neighboring anterior ethmoidal cells. On the other hand, when the frontal sinus develops by a direct extension of the frontal recess there will in all likelihood be no true nasofrontal duct.

The sphenoid sinus primarily arises in relation with the posterior cupola or dome of the cartilaginous nasal capsule and is demonstrable as early as the 4th month of foetal life. The cupola shaped recess or terminal nasal sinus is poorly developed in man, yet is strictly speaking the primitive sphenoidal sinus. The wall of the terminal sinus gives the foundation for the sphenoidal conchae. (Ossiculum Bertini.) The actual bone arises through ossification which begins in the 5th month of foetal life as two primary and several secondary centers.

It must be clearly understood that no portion

of the fetal sphenoidal sinus is contained within the sphenoid bone. It is necessary that resorption of the intervening nasal capsule take place before the terminal nasal sinus (early sphenoid-sinus) can come into actual contact with the

THE ETHMOIDAL CELLS.



Figs. 10, a-b. Frontal sections through the frontal recess of a 7-month fetus. Section Fig. 10a is farther ventral than is section Fig. 10b. (Schaeffer, Figs. 147-148) Note the blind ventral extremities of the frontal furrows in section Fig. 10a. Strictly speaking these are early cellulae ethmoidales anterior. In section Fig. 10b, some of the furrows or cells are shown to be in free communication with the frontal recess. Any one of these cells may develop sufficiently far to become the frontal sinus.

body of the sphenoid-bone. Such resorption does occur subsequently. Therefore, the foetal sphenoidal sinus is a constricted portion of the nasal fossa. The proximal end of the constriction remains as the ostium of the sinus and is always located cephalic to the highest nasal conchae that may be present in the particular case.

The average sphenoidal sinus of the term foetus has a capacity of 6-8 cubic m.m., measuring approximately $2 \times 2 \times 1.5$ mm. The ostium sphenoidale varies in diameter from 0.5 to 1.5 mm.

THE ETHMOID SINUSES

The ethmoidal cells are primarily extensions or evaginations of the nasal mucosa from the middle, superior and first supreme nasal meatuses; e. g., from the meatuses directly or from the accessory furrows and recesses which configure their lateral walls, particularly the lateral walls of the middle and superior meatuses.

The initial ethmoidal outpouchings are in evidence as early as the 4th month of foetal life. For some time the surfaces of the mucous membrane sacs are in many cases in contact and the

lumina in a sense merely potential. Again the early sacs may be mere dimple like depressions.

However, by the seventh month the evaginations have taken shape in the form of hollow tubular-like, blindly ending sacs, with ostia in communication with the points of initial outgrowth. These tubular sacs may now be called ethmoidal cells.

Horizontal sections of the nose of the term foetus show the ethmoidal cells considerably developed, the anterior group measuring on the average $5 \times 2 \times 3$ mm. The posterior group measures $5 \times 4 \times 2$ mm.

RESUME

As a matter of resumé let us say first that the maxillary sinus primitively is an evagination of the mucous membrane of the floor or lateral wall of the infundibulum ethmoidale.

Second, the frontal sinus develops either by a direct extension of the whole recessus frontalis or from one or more of the anterior group of



Figs. 11, a-b. Drawings of frontal section through the left nasal fossa in the region of the frontal recess. Note the early frontal furrows, rudiments of anterior ethmoidal cells. Fig. 11a, from a term fetus, series D, slide 4; Fig. 11b, from a 7-month fetus, series B, slide 31. (Schaeffer, Figs. 149-150)

the ethmoidal cells or occasionally from the ventral extremity of the infundibulum ethmoidale.

Third, the sphenoid sinus arises in relation to the posterior cupola of the cartilaginous nasal capsule and is merely a constricted portion of the nasal fossa.

Lastly, the ethmoidal cells are primarily evaginations from the middle, superior and supreme nasal meati.

DISCUSSION

Dr. O. M. Steffenson, Chicago: The elongation of the face results in a separation of the shoulder of the

inferior turbinate from the lower orbito-ethmoid junction.

The inferior turbinate shoulder retains its connection with the ethmoid capsule and the orbital wall by several elongated portions of bone. The largest and most definite of these is the uncinat process. In front of the uncinat a spicule of bone unites the shoulder of the inferior turbinate to the base of the lacrimal bone and behind the uncinat the break between that bone and the palatal bone is again bridged by a descending sheet of bony connection.

The space between the orbit and ethmoid is filled by an almost smooth and continuous bony curtain of variable width pierced by the inlet to the antrum.

Other specimens show considerable pneumatization of the bony connection between the orbit, the ethmoid capsule and the turbinate shoulder. This formation presents an independent system of cells occupying the internal orbito-ethmoid angle. The extent of this pneumatization is also variable and one may find from two up to a half dozen distinct cells of this variety.

The morphology of this region is of particular interest to those who wish to puncture the antrum near the site of the natural opening. Neglect or failure to recognize the supra-antral cells when they are infected in the course of a general ethmoid involvement is often the cause of failure to obtain a satisfactory result with the sinus exenteration. An attempt to puncture the antrum near the natural opening in a case of deficient development would drive the instrument into the orbital cavity.

Excessive pneumatization in the posterior part of the ethmo-orbital connection encroaches on the sphenopalatine foramen and may convert the entrance of this orifice into a tortuous canal which may be difficult or impossible to follow.

The author's presentation of the two different origins of the frontal sinus is of signal value to the surgical procedures in that region. It clarifies at once the moot question of the position of the frontal duct. If the sinus arises from the frontal depression the position of the duct will be anterior and the access to the frontal sinus will be wide. In case the frontal sinus originates from an anterior ethmoid cell the duct will be placed posterior; difficult of access with a thick bony anterior wall.

THE VALUE OF X-RAY THERAPY IN MALIGNANT DISEASE*

CASSIE B. ROSE, M. D.

CHICAGO

For the relief of human suffering, both mental and physical, the use of x-ray and radium has given to medical science a long forward step in the treatment of malignant disease. Radiation, if used early and in sufficient amount, produces

a cure in 95 per cent. of the skin cancers. Statistics show that the combination of surgery with radiation gives about 30 per cent. better results in most neoplasms than surgery alone. For the inoperable or recurrent cases radiation gives more help than any other form of treatment. The latter group will be considered in this paper.

Remarkable palliation of a malignant process is often obtained by moderate frequently repeated doses of x-ray therapy, such as can be given with the apparatus now available in most x-ray laboratories and, as a rule, with very little roentgen sickness. If practicing physicians, and perhaps some roentgenologists, better understood this use of x-ray, no doubt more patients would receive its benefit.

The following routine treatment doses are used in the x-ray department in the Presbyterian Hospital of Chicago: For carcinoma of the breast, carcinoma or sarcoma of the bone, and all abdominal or thoracic neoplasms, 5MA, 140 KVP, $\frac{1}{4}$ mm. copper, and 1 mm. aluminum filter, 10 inch skin target distance, time 10 minutes, covering a square area fifteen cm. in diameter. This dosage gives thirty-five r per minute. For superficial glands or those lesions easily susceptible to x-ray, 130 KVP, and 4 mm. aluminum filter is substituted in the above dosage, all other factors remaining the same.

This dosage is varied to suit the clinical condition of the individual patient, by decreasing either the time duration of the treatment, the size of the area rayed, or the frequency with which treatments are given. No other factors are altered. Routinely one area is rayed at each treatment, and two or three treatments a week are given. directed from various angles toward the lesion, returning to the same area not oftener than once in two weeks, nor more than three times without a rest interval of six weeks to two months. Two or three such series may be given, often with longer rest periods or less frequent treatments in the later series. If the patient is comfortable and the lesion under control, treatment may be stopped. Always, however, patients are asked to return at frequent intervals for re-examination and in case of recurrence the treatment is resumed.

Glucose, either intravenously or orally, in some cases in conjunction with calcium lactate, was given to a few of the patients with bone

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lesions. Although in some instances it seemed to help, its therapeutic value might be questioned because some equally good results were obtained by x-ray alone.

Hodgkin's disease and others of the malignant lymphoma group, whether in the superficial or deep lymph glands, are usually quickly relieved by x-ray. Unfortunately, there is not often a permanent cure, and with each recurrence the x-ray effect is less satisfactory.

For example: Mr. H. W., aged fifty-nine years, after three spontaneous remissions of enlarged cervical glands,

day. On examination a nodular mass was palpable in the middle abdomen, the liver and spleen were large, but no superficial lymph glands were palpable. The patient did not respond to x-ray as before. Instead, he grew rapidly weaker, became somewhat confused mentally, and died within a month.

The striking finding at postmortem was the marked hyper-plasia and soft hemorrhagic appearance of all the lymph glands and the spleen. X-ray surely helped this man and probably gave him over a year of life which he otherwise would not have had. His history is quite typical. The next two are not so common.

Mr. R. S., aged thirty years, came with cyanosis of head and thorax, dilatation of superficial veins of



Fig. 1 A.

Fig. 1 B.

Fig. 1 A, B. Mediastinal tumor, reduced from 18 to 12 cm. in width after three X-ray treatments. Films taken at 36-inch distance.

came, in November, 1917, with enlargement of all of the superficial glands, the liver and spleen, normal leukocytes, a variable temperature between subnormal and 103°, rapidly decreasing hemoglobin from fifty-six to thirty per cent., marked loss in weight and great weakness so that the patient seemed in extremis. X-ray treatments of three minutes every other day were given at first because of his poor condition, gradually increasing to seven minutes as the patient improved. Within two months the glandular enlargement had disappeared, the temperature was normal and the patient had gained five pounds. A less severe recurrence in February, 1918, was treated intermittently until May, at which time the patient seemed well except for slight loss of strength.

Not until fifteen months later, July, 1920, did he return with a slight recurrence of symptoms. He stated that in the interim he weighed more and felt better than ever before in his life and worked every

the chest, dyspnea, hoarseness and loss in weight. This condition had been progressively increasing for a year and was evidently due to pressure from a mass in the mediastinum. X-ray (Figure 1a) showed this mass as a dense, sharply defined, supracardiac shadow, nodular in outline, eighteen cm. in transverse diameter. It bulged into the posterior mediastinum and did not pulsate. A diagnosis of mediastinal tumor, probably lymphosarcoma, seemed the most likely. After three x-ray treatments the supracardiac shadow had reduced from eighteen to twelve cm. in transverse diameter (Figure 1b), and after five more treatments to 9½ cm. and the patient was clinically well. Up to the present, now eight years, he has remained perfectly well, and chest films taken at six-month intervals have all been normal.

Mrs. N. S., aged fifty-three years, in November, 1921, complained of her third paroxysmal attack of sharp sticking pain in both arms and the left leg, asso-

ciated with precordial distress and dull aching pain in the left shoulder and on the left side of neck. The patient was pale, weak and had lost thirty pounds in weight in the last six months. Superficial lymph glands and abdominal masses were palpable, the largest of which was twenty cm. in diameter. A left sided pleural effusion on aspiration yielded 1300 cc. of light yellowish-gray, opalescent, non-odorous fluid. It had a specific gravity of 1018, contained 2100 leukocytes per mm., predominately lymphocytes, and many small fat globules. No micro-organisms were found. The most probable diagnosis seemed to be lymphosarcoma with

come recurrences which respond to x-ray less and less readily. One case will suffice to illustrate.

Mrs. A. Z., aged thirty-six years, in April, 1917, had a leukocyte count of 350,000 with many myelocytes, a hemoglobin of thirty-eight per cent., a liver and spleen which filled the abdomen to the size of a nine months pregnancy, and was so weak that she needed help in walking. It seemed a hopeless situation, and yet, x-ray *might* help.

The spleen was divided into six areas, one of which



Fig. 2 A.

Fig. 2 B.

Fig. 2 A, B. Bone destruction in the left ischium and inferior ramus of pubis from a small round celled sarcoma, and bone regeneration after x-ray treatment, Patient living and well eight years to date.

glands pressing on the thoracic duct, thus producing the chylous effusion.

Between November and March this patient received thirteen x-ray treatments. Reactions occurred, particularly after the fourth and fifth treatments, consisting of a severe chill and temperature of 102°, with nausea and weakness which continued until the next day. A second aspiration in January yielded 850 cc. of chylous fluid similar to the first except for the absence of leukocytes. Some fluid recurred later but was not aspirated. The palpable glands gradually diminished, the patient recovered her normal health, and has remained well to the present time, now ten years.

These last two patients were exceedingly fortunate in receiving so much and such lasting help from x-ray therapy.

Leukemic patients respond to x-ray in much the same manner as those of the lymphoma group. The white count drops, the spleen decreases in size, and their strength returns. Then

was rayed at each treatment, three times per week, three to five minutes, later increasing to ten minutes. Blood counts at frequent intervals were used as a guide to treatment. The white count gradually decreased, reaching 10,000 in February, 1918, the hemoglobin rose to seventy-eight per cent., the liver and spleen decreased to half the previous size, and the patient recovered her strength so much that she was able to keep house, including the family washing, for a family of seven, for a period of a year. In January, 1919, for the first time, she failed to keep her treatment appointment. She had died after an illness of four days, only three of which she was confined to bed. Surely x-ray added more than a year of life for this patient whose condition seemed so precarious when the treatment was first started.

Malignant neoplasms of bladder, prostate or kidney, are often remarkably benefited by radiation therapy, either alone or in conjunction with operation. In some instances of bladder or prostatic carcinoma, suprapubic drainage or an in-



Fig. 3 A.

Fig. 3 B.

Fig. 3 A, B. Tumor destruction 5 cm. in diameter in the lower part of sacrum, with bone regeneration after x-ray treatment. Patient well after 15 months.

dwelling catheter may be indefinitely postponed or avoided.

Mr. E. G., aged seventy years, had signs of prostatic enlargement, considerable urinary bleeding, pain in the lower abdomen, and loss of weight and strength. X-ray treatment was directed toward the prostate, from front, back, each groin and through the perineum, one area at each treatment, for ten minutes, bi-weekly at first, and once a week as the patient improved. Within two months, after only six treatments, the bleeding stopped. It recurred two weeks later. Four treatments stopped it again. Twice since there has been slight bleeding for a day or so, each time stopped by a single treatment. Subsequently radium needles inserted through the perineum into the prostate, further reduced its size. It is now one and one-half years since the first x-ray treatment. The patient says he feels as well as he ever

did, and is having no urinary distress. He certainly looks well and has not been operated on.

Mr. E. H., aged five-five years, came because of pain in the right side and urinary bleeding. After careful study, including pyelograms, a kidney tumor was diagnosed. Carcinoma was found, so necrotic that it could be scooped out with the hand, but could not be entirely removed.

Three series of twelve x-ray treatments each were given during the next ten months, directed anteriorly, posteriorly and laterally to the right kidney region, one area at each treatment, and two treatments per week. The patient entirely recovered his strength, gained fifty pounds in weight, and resumed his work. Not until two years later did a recurrence appear. Then a large mass developed in the lower abdomen causing partial intestinal obstruction and the patient died after about three months. Since this tumor could not be



A

B

C

D

Fig. 4 A. Bone destruction in the head of humerus, metastatic from breast carcinoma. B. C. D. Progressive stages of bone regeneration following x-ray treatment.

entirely removed it seems hardly probable that the patient could have been well for so long a time without the help of x-ray.

Breast carcinoma, postoperatively should be followed by one or two series of x-ray treatments as a prophylactic measure. For inoperable and



Fig. 5. Bone destruction of acetabulum and sacrum from metastasis from breast carcinoma. There was also destruction of five vertebrae, and several ribs.

recurrent cases nothing else offers so much help for the patient. Even large ulcerating lesions can often be made to heal.

Mrs. M. C., aged fifty-six years, had a large ulcerative carcinoma of the left breast, measuring eight by ten cm., which discharged much foul smelling pus. There had been no previous operation or other treatment.

After fourteen x-ray treatments, four of which were unfiltered, the ulcer entirely healed. After four and one-half months the patient returned with enlargement of the supraclavicular and axillary glands, and swelling of the left arm, but the old ulcer was still healed, and showed no sign of breaking down.

Primary malignant lesions in bone sometimes respond surprisingly well to x-ray treatment. If osteolytic in type, recalcification may occur. If osteoplastic, there may be no apparent change, or the calcification may increase. In either case there is remarkable improvement in the patient's clinical condition.

Mrs. A. G., aged fifty-six years, came in June, 1923, with pain in the region of the left hip, so severe that she had been unable to walk or to lie on the left side for six months. A large, hard vaginal mass was palpable, firmly attached to bone. An x-ray film (Figure 2a) showed an irregular, "moth-eaten" area of bone destruction in the left ischium and inferior ramus of the pubis. A microscopic section showed a small round celled sarcoma. Radium needles were inserted into the tumor twice, a total of 1500 milligram hours. In addition, four series of eight x-ray treatments each were given. Gradually the tumor disappeared. Within two months recalcification of bone in the involved area was visible, in three months it was well marked, and soon



Fig. 6 A



Fig. 6 B.

Fig. 6, A, B. Shows recalcification of bone after x-ray treatment.

after became more dense than the normal side. (Figure 2b.)

Once, in 1930, the patient had a little pain in this region, but no evidence of recurrence could be found on palpation or by x-ray. However, seven x-ray treatments were given as a prophylactic measure. She had no further trouble, and is still living and well—an eight-year cure of a sarcoma by radiation.

Mrs. G. M., aged 22 years, developed pain in the pelvis, radiating to the legs. It started insidiously and within six months was so severe that she was bedridden, and depending on opiates for relief. A large, hard, smooth mass was palpable in the posterior vaginal vault, firmly attached to bone. X-ray film (Figure 3a),

An x-ray film (Figure 4a) showed a destruction of the head of the left humerus, undoubtedly a metastasis. X-ray treatments were given to the left shoulder, through four portals, one area for ten minutes at each treatment, three treatments per week at first, once a week in the second series, and after that intermittently. After two months of treatment there was some calcification in the involved area, and later films showed increasing sclerosis (Figure 4b, c, d). The pain disappeared, and the patient could use her arm normally, such as drive her car, can fruit and sweep the floor. She could not hold her arm straight above her head.

This good result continued two and one-half years, until February, 1927. In the following summer the

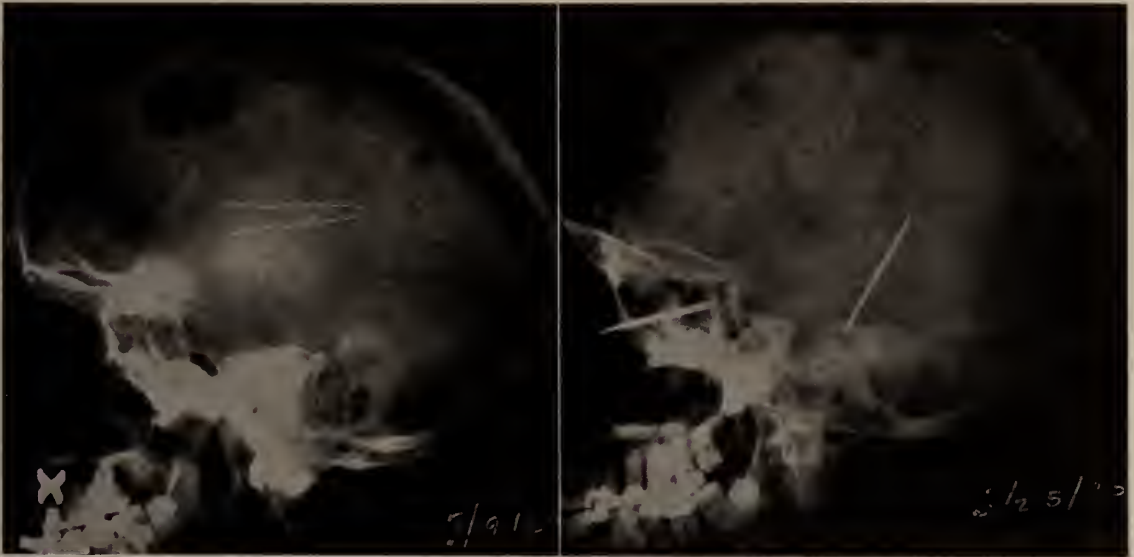


Fig. 7. Area of metastatic destruction in the skull, which partly regenerated after treatment, but later extended to other areas.

showed a rounded area of bone destruction, five centimeters in diameter, in the lower left aspect of the sacrum. No microscopic study was made, and no radium inserted. X-ray therapy was begun February 17, 1930, and within three months the patient was free from pain and able to go for short walks. Now, fifteen months later, she is able to live her normal life, and frequently plays eighteen holes of golf. X-ray films have shown a progressive increase in bone density in the involved area, which is now more dense than normal (Figure 3b). Is this a cured sarcoma?

Metastatic lesions in bone, whether arising from carcinoma of the breast, prostate or other source, are often remarkably palliated by x-ray therapy, with recalcification of bone in the areas of tumor destruction. Two examples will suffice.

Mrs. G. T., aged forty-two years, in October, 1924, six years after right breast removal, complained of severe pain in the left arm and shoulder, and inability to raise the arm without the help of the other hand.

patient became lame and suffered from fleeting pains in various parts of the body. In October films showed multiple metastases to many bones. Some recalcification occurred after further x-ray therapy, but the result was not as satisfactory as before. A pathological fracture occurred in the humerus, just below the old area of sclerosis. Although this patient slept well, retained her appetite and was for the most part fairly comfortable, she gradually lost ground and died February, 1929—eleven years after her breast removal, and four and one-half years after the metastasis was found in the left humerus. Surely x-ray gave her usefulness and comfort, instead of pain and disability.

Mrs. C. D., two years after left breast removal, at the age of thirty-six years, was delivered of a full term baby, in June, 1928. In the latter part of the pregnancy she was unable to walk because of severe pain in the pelvis and legs, which was interpreted as pressure pain. Instead of disappearing after the delivery, it grew progressively worse. The patient became

unable to turn in bed without help and then only with excruciating pain. Even the slightest jar caused pain. Opiates gave only partial relief.

X-ray films in July (Figure 5) showed bone destruction of the left side of the sacrum, the right acetabulum and five vertebrae, erosion with fracture of two ribs, and many other small areas of rib involvement. In August, 1928, x-ray therapy was begun. Rapid relief of pain and calcification in the areas of bone destruction followed. In October she was comfortable. In March, 1929 (Figure 6a, b), she walked with a cane, a few weeks later the cane was discarded, and she was able to live her normal life. In January, 1930, she took a seventy-mile automobile ride without discomfort. Films at this time showed such complete regeneration of bone that the old areas of destruction were difficult to visualize.

Carcinoma appeared in the other breast, and in many skin nodules, there were bone metastases to the skull (Figure 7), and the old areas became less densely

calcified (Figure 8). In July she walked less easily and had considerable nausea and vomiting. In October, 1930, she died. During the last few weeks her pain was easily controlled by aspirin, never more than four tablets in twenty-four hours, and she had only one dose of morphine, given the day before she died. She never lost her morale. She had two full years of comfortable and useful life, for which x-ray should be credited.

The time is too short to cover all of the malignant conditions in which x-ray therapy is of value. Because clinicians in general, and many roentgenologists, seem to take a hopeless attitude toward malignant disease, and particularly toward metastatic lesions in bone, I am presenting these cases as examples of what may be expected from x-ray therapy, with the plea that these unfortunate sufferers be given this, the greatest boon that we have to offer, until medi-



Fig 8, A, B. Shows some loss in calcification six months before the patient died, although not as marked as before the x-ray treatment was started.

cine shall have found a real cure for this dread disease, a part of which may be x-ray.

DISCUSSION

Dr. I. S. Trostler, Chicago: Dr. Rose is to be congratulated upon the results she secured in these advanced cases. The most important thing, I think, is that we should try to give what relief we can even to what appears to us to be the most hopeless cases.

One of the important things about Dr. Rose and her work is that she is, first, a physician and doctor, and, second a radiologist. If more of us would remember that we are doctors first and x-ray specialists later, we would also be able to do the good work she is doing.

THE TREATMENT OF ARTHRITIS BY SUSTAINED FEVER THERAPY* A PRELIMINARY REPORT OF SIX CASES

D. E. MARKSON, M. D., F. A. C. P., and
S. L. OSBORNE, B. P. E.

CHICAGO

Hyperthermia induced by diathermy has already been used in the treatment of paresis,¹ and in asthma² in the Northwestern University Neurological and Asthma Clinics respectively with excellent clinical results. Its use in the treatment of arthritis, as far as we have been able to survey the literature, has not been given a trial. The purpose of this paper is to give a preliminary report of six cases of chronic infectious arthritis treated by this method and the responses to this type of therapy. These patients had been extremely resistant to all forms of management over periods of from one to three years.

An attempt was made at the Northwestern University Arthritic Clinic to compare the clinical therapeutic results of various agents used in the treatment of arthritis—autogenous vaccines, non-specific proteins, vaccines, and desensitizing agents. In this group was included typhoid, mirion, autogenous vaccines, Crowe's vaccine, Small's soluble antigen and mixed vaccines. It occurred to us that only in the group where fever was produced did any definite benefit result.

This comparatively new method of producing hyperthermia suggested a means of testing the accuracy of this observation as we could control the temperature to produce any type of curve we desired. At first we attempted to produce curves simulating the non-specific curves of vaccine therapy, that is, short curves rising to 103 to 104

degrees Fahrenheit and descending over three to five hours to normal temperatures. These short curves, similar to that illustrated in Chart 1, showed no striking results. Thinking that a sustained temperature of 103 to 104 degrees Fahrenheit might be productive of better results, a new type of curve was evolved. Such a curve is well illustrated in Chart 2.

We arbitrarily chose eight treatments to constitute one course, these to be given bi-weekly. However, after a trial, it seemed to us that this was too exhausting on the patient, and so the frequency of treatments was changed to one a week. This latter method has proved quite satisfactory and is being employed at the present time. Each of the six patients reported in Table 1 was given a course of eight weekly treatments. Eight other patients were given one to six treatments but are not included in this report.

TECHNIQUE

Bed Preparation.—The prevention of heat loss is an important factor in this method of treatment. It is quite essential that strict attention be given to the preparation of the bed with this objective in mind.

First, a woolen blanket is spread over the mattress, then a full length rubber sheet, and finally, another woolen blanket. A bath blanket instead of the usual bed sheet covers these and is snugly tucked in to prevent rucking by restless movements of the patient. A rubber sheet is placed over the pillow, followed by a blanket, and then another bath blanket. These are placed over and around the shoulders forming a shawl effect with the rubber sheet over all. The bath blanket keeps the woolen blanket from irritating the skin. Thus, heat loss from the shoulders and neck is reduced to a minimum. A bath blanket, a woolen blanket, a full length rubber sheet, and a woolen blanket in successive order covers the patient and each carefully tucked in. These are followed by four more good blankets and insulation of the patient is as complete as possible. The successful maintenance of a sustained temperature is dependent upon these essential details.

Electrode Application: A high frequency machine of low voltage is used, having a capacity of four thousand milliamperes. This proves an adequate and safe source of energy. A high amperage, low voltage current was selected. The entire trunk, after being anointed with a lubricating jelly, is encased between Neymann fenes-

*From the Arthritic Clinic Department of Medicine and the Department of Physical Therapy, Northwestern University Medical School.

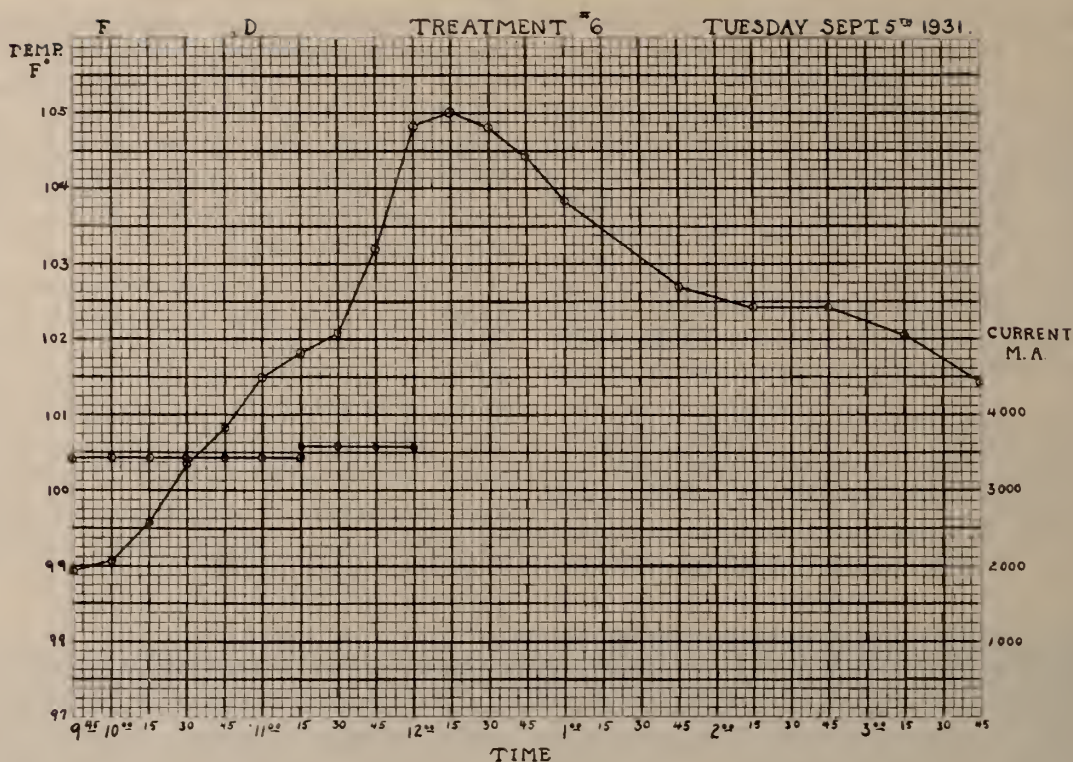


Chart 1. Fever of short duration. Poorly sustained temperature.

trated electrodes which are held in place by an especially made canvas jacket. These electrodes and jacket are made by a well known manufacturer of electrotherapeutic apparatus. The fenestration of the electrodes make the possibility of burns a remote one. We have had no burns nor discomfort from electrodes.

Temperature Curve: Our object at present is to secure a sustained temperature of 103 to 104 degrees. Varying amounts of current are necessary to do this. Patients vary a great deal. Some patients require as little as thirty-two hundred milliamperes while others need the full capacity of the machine. The time that is required to secure the temperature also varies from one to two and a half hours. The average time one requires, however, is one and three-quarter hours. We are guided by rectal temperature which is taken with a thermo-couple. We will later describe the method of calibration. Readings are taken every fifteen minutes. Patients often show marked distress when an increment of one degree is secured in fifteen minutes. This should be avoided.

The current is turned off when rectal temperature reaches 104.2 degrees. This initial tem-

perature is usually followed by a secondary rise of from five-tenths to one and a half degrees. If there is a tendency for the temperature to drop, the current is again turned on for a few minutes. The electrodes, therefore, are not removed until one is sure that no more current is needed or that their removal does not materially influence the effectiveness of the treatment by heat loss. We submit Chart 2, which shows a typical curve. A temperature of 104 degrees or more is maintained for ten hours, and is only reduced at this point by the removal of blankets. Patients perspire profusely during treatment and they are encouraged to drink freely of water. When the rectal temperature drops to 100 degrees, a sponge bath and alcohol rub is given and the patient placed in a freshly prepared bed for the night. Next morning the patient is ready for discharge from the Hospital.

Temperature Control: Occasionally it becomes necessary to retard the secondary rise and this can often be accomplished by the application of ice packs or cold packs to the head. If this is not effective, a slight exposure of the patient while taking off the electrodes will stop the upward tendency. When neither of these meth-

ods work, then the full exposure of a leg or arm will cause a response. The ease with which temperature can be controlled is one of the distinct advantages of this method.

Diet. Breakfast on the day of treatment should consist of a very light or liquid diet. At noon the patient may be fed liquids. We usually give our patients soup, milk, coffee, or orange juice with ice (Table 2). Regular diet can be given at night although the patient should be fed by someone so as to prevent any disturbance of the blankets which might cause heat loss.

Rectal Temperature Measurement: The use of the usual clinical thermometers for recording rectal temperature means a disturbance of blankets covering the patient, thus permitting heat loss through the introduction of external air. The thermocouple method of recording temperature is used to overcome this difficulty. The thermocouple is made of copper and "ideal" wire. The hot junction, with the wires leading therefrom suitably insulated, is sealed in the conical end of a small tubular rectal electrode used for electrotherapeutic work. The cold junction is placed in a thermos bottle filled with water at room temperature. A D'Arsonval type of galvanometer of requisite sensitivity is properly connected between the hot and cold junctions. The thermocouple is calibrated before use by immersing the hot junction into a bottle of water at about 112 degrees. When the temperature of water reaches 108 degrees the beam of light is adjusted to the extreme right end of scale. Deflexion is noted for each degree fall until water reached a temperature of 97 degrees. Water temperature is determined by a standard mercurial thermometer. Temperature is plotted against deflection resulting in a straight line, and from this chart temperatures are readily computed. The hot junction is then transferred to the patient's rectum whose body temperature is to be determined. If the temperature of the cold junction changes, these changes, plus or minus are added to the reading. Over several hours some change in the temperature of the cold junction is apt to take place. It is our custom at the end of the experiment to recalibrate our thermocouple as a check. Once the galvanometer is set up it should not be disturbed or jarred. Where there is much vibration it is impossible to use the thermocouple method because the continual

vibration disturbs the galvanometer calibration so that readings become unreliable.

A very interesting observation is that with some patients a definite current effect can be noted. This causes heating of the thermocouple so that a false high temperature is read. A fluctuation of the light beam back and forth of from two to three millimeters can be seen. To demonstrate this effect, turn off the current from the high frequency machine and immediately the light beam falls toward the cooling side. When the current is again abruptly turned on, the beam of light rapidly swings back.

REACTIONS OBSERVED DURING TREATMENT

Immediate Reactions.—1. Chills are particularly severe, lasting one-half hour or longer, in those patients recently given typhoid or mixed vaccines. 2. Severe throbbing bitemporal headache at a temperature of 103 degrees and continuing for four or five hours during the treatment. 3. Joint pains become severe during the early rise of temperature but disappear at the height of fever. In others, the opposite phenomenon is noticed. 4. Feeling of weakness with nausea and dizziness during the height of the curve, particularly when the fever rises more than one degree in fifteen minutes. 5. Patients become anxious and restless at the height of fever but usually quiet down as the treatment progresses. Restlessness is particularly noticeable on the night following the fever reaction. 6. The perspiration is usually profuse, limited in some cases to the upper part of the body in the first treatment, and, in subsequent treatments becomes generalized. The perspiration is usually acid at the beginning but soon becomes neutral and remains so during the entire curve. 7. The mouth temperature in many patients crosses and recrosses the rectal temperature, a phenomenon particularly noticed in arthritic cases. This can be seen in Chart 2. The normal relationship of mouth and rectal temperature reappears when the current is turned off (see Chart 2). 8. The pulse pressure increases due to a lowered diastolic pressure with systolic remaining stationary. In some cases a drop of twenty to thirty millimeters in the diastolic pressure is noted.

Later Reactions.—1. Herpes labialis occurs on the second or third day, and a severe enanthem covering the hard and soft palates as well as the

buccal membrane. A papular erythematous rash appearing at the folds of the skin also developed on a few of the patients. 2. Weakness and lassitude lasting usually one or two days. 3. The pain and stiffness in the affected joints is very much improved for three to five days following treatment. 4. Weight loss of five to six pounds is rapidly replaced. 5. The appetite becomes distinctly better.

LABORATORY DATA

Ruth E. Jung, from the laboratory of Doctor Alexander Day³ made the following studies on patients F. D., and N. P.: Opsonic index, complement content, agglutinins, r. b. c., w. b. c. and differential counts. The blood was drawn before each treatment, at the height of the curve, and, the next morning after treatment. No marked variation from normal was noted in the opsonic index, complement content, or in the agglutinins. The leucocytes and erythrocytes showed a marked rise at the height of the curve. A relative increase in polymorphnuclear leucocytes was also noted. This work is being continued by these investigators who have already published a preliminary report.³ The blood lactic acid run under similar conditions by Dr.

Fishback of the department of pathology did not show any variations from normal at any stage of the fever curve.

The blood chemistry findings reported by Bischoff, Ulmann, Hill and Long,⁴ on six normal individuals with exposures of one and one-half to three and one-half hours is, as follows: Increase of the blood plasma pH and a decrease of from four to twelve volume per cent. in the total CO₂ content of the blood; the pH of the urine remained unchanged or increased; the inorganic phosphorus unchanged or decreased, and the hemoglobin more or less highly oxygenated. They explain that the change in the total CO₂ content of the blood is readily accounted for by the shift of base to the blood proteins because of the increase in pH. The fall in the total CO₂ content may or may not signify a lowered alkali reserve, since the pH of the plasma and the oxygenation of the hemoglobin have both increased. Quantitative calculations indicated no change in the alkali reserve. In experimental work on both man and dogs, Mortimer⁵ noted an increase in blood chlorides, blood calcium, uric acid and non-protein nitrogen which is accounted for by concentration of the blood. He also observed a

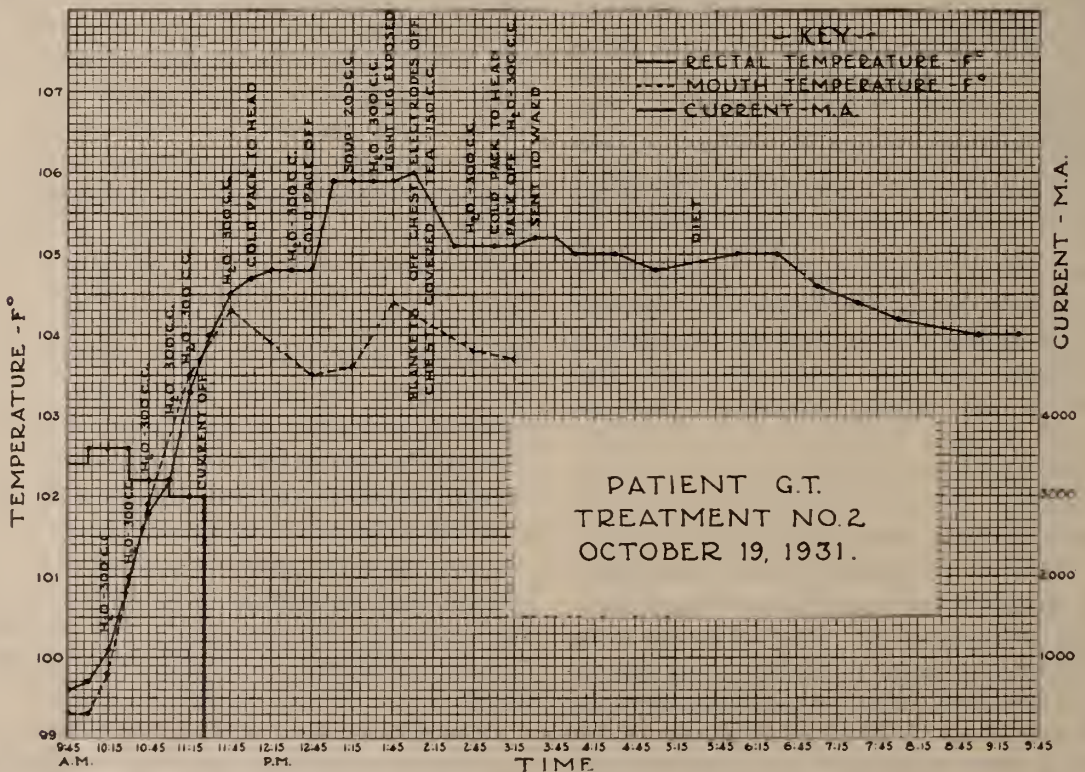


Chart 2. Fever curve of 104 F. sustained for 10 hours.

decrease in CO_2 combining power in both man and dogs.

CLINICAL RESULTS

Clinical Results: One typical case is briefly summarized: N. P., white female, age thirty-four, entered the clinic service on July 8, 1929, with the following complaints: pain and swelling in both feet and ankles, pain and swelling in fingers and wrists; constipation; weakness and nervousness; inability to walk because of severe pain in feet and ankles.

Physical examination revealed the following possible foci: chronically infected tonsils, chronic purulent sinusitis and ethmoiditis, chronic suppurative otitis media, chronic endocervicitis. Management of these conditions received proper treatment in the respective departments.

The second phalangeal articulations of both hands showed fairly well marked periarticular swelling, decreased mobility due to pain, inability to make a fist; the ankles swollen and tender, as were the tarso-metatarsal articulations; tenderness over the lumbo-sacral junction.

The laboratory data as follows: B. M. R. —2;

blood chemistry, N. P. N. 26.8, urea N. 11, creatinin 1.44, uric acid, 3, sugar (glucose) 98.6, chlorides 480, ca.9, sugar tolerance slightly decreased. Blood Wassermann, negative; R. B. C. 4,360,000; W. B. C. 8,200, lymph 25, large M and trans. 3, polys 70, eosinophiles 2. Urine negative except for mucus shreds and epithelial cells; culture of ureteral catheterized specimen negative—no growth after seventy-two hours. X-ray of accessory sinuses negative; of colon, shows ileo-cecal incompetency, otherwise negative; of stomach, negative; gall bladder visualization with dye, negative; of lumbo-sacral, shows partial obliteration of the right sacro-iliac joint probably due to arthritis; of the foot and wrist, sharpening of the articular margins, suggestive of arthritic pathology.

Treatment of this case was begun in the arthritic department on August 9, 1929. The tonsils were removed, drainage of the purulent sinuses was instituted, and proper treatment of the otitis media was carried out. The gynecological department treated the endocervicitis. The management of the arthritic condition consisted of non-specific therapy, autogenous vaccine from tonsils, physiotherapy, body mechanic exercises, colon

TABLE 1

Patient	Age	Duration	Type	Joints Involved	Previous Treatment	Hyperthermia	Results
D. F.	34f	3½ yrs.	Chronic infectious	Fingers, wrists, knees, cervical spine. Partial ankylosis of left knee (fixed in partial flexion). Motion extension 160°, flexion 90°.	Removal of tonsils and infected teeth. Non-specific vaccines. Physiotherapy (radiant heat, infra red, muscle training, home physiotherapy). Orthopedic (cast to right knee). Clinic treatment 1 year.	Began April 16. Ended May 15. 8 weekly treatments.	Improved. Is able to walk in erect position. Motion in fingers and wrists markedly improved. Now able to do own housework for first time in 3 yrs.
N. P.	34f	4½ yrs.	Chronic infectious	Fingers, wrists, shoulders, knees; walks with difficulty because of pain in both ankles.	Treatment of chronic suppurative sinusitis — chronic purulent otitis media and chronic endocervicitis. Vaccines—colon diet physiotherapy management of constipation. Clinic treatment 1 year.	Began April 22. Ended May 22. 8 weekly treatments.	Markedly improved. Relief from pain and stiffness in all joints. Is now able to walk without pain and do own housework.
E. C.	34f	3 yrs.	Chronic infectious	Polyarticular. Flexion deformities of fingers of both hands and elbows. Partial ankylosis of knees, walks with cane.	Tonsillectomy. Vaccines and non-specific therapy, arsenicals, iodides. Clinic treatment 6 months.	Began May 21. Ended June 25. 8 weekly treatments.	Improved. Relief from pain. Loss of 10 lbs. wt. Able to walk without cane.
D. F.	18f	18 mos.	Chronic infectious	Wrists, elbows, knees, shoulders and fusiform swelling of fingers.	Began at once with diathermy.	Began July 23. Ended Sept. 21. 8 treatments.	No improvement. Patient did not co-operate. Temperature curve not sustained.
D. B.	45m	14 mos.	Subacute infectious	Polyarticular especially the proximal interphalangeal joints 3rd and 4th fingers of left hand. Unable to work 6 months.	Tonsillectomy. Treatment of prostatitis, autogenous vaccines, physiotherapy. Clinic treatment 3 months.	Began May 20. Ended July 8. 8 treatments.	Markedly improved. All pain and stiffness entirely relieved after 4th treatment. Iritis improved after third treatment.
E. P.	31f	3 yrs.	Chronic infectious	Right wrists, ankles, knees. Difficulty in walking. Cannot straighten arms and legs.	Tonsillectomy. Vaccines, physiotherapy, body mechanic exercises. Treated 1 month in clinic.	Began June 5. Ended Aug. 17. 8 treatments.	Markedly improved. Entirely relieved of pain. Can do her own housework.

diet and palliative treatment with drugs, arsenicals, iodides, thyroid extract, vaso-dilators, cinchophen, and salicylates.

Patient improved with remissions and exacerbations for about one year. In February, 1931, symptoms returned with the same intensity as at the onset, so fever treatment was advised and began on April 22, 1931. After the fifth treatment she noted a complete relief from pain and stiffness, and has continued to improve without other treatment up to the present time.

Six cases of arthritis, five female and one male, ranging from eighteen to forty-five years of age, suffering from chronic infectious arthritis from one to four and one-half years and treated by the accepted methods with only indifferent clinical improvement, were each given sustained fever therapy as a last resort. Using the accepted criteria that one has to gauge improvement in ar-

thritis, we have classified two cases as markedly improved, three improved, and one, as not improved. This series is obviously too small to be conclusive, and further, the time elapsed is too short to rule out psychic and other factors that may enter into temporary remissions. However, we feel it offers definite possibilities in the management of selected arthritic cases. The method is entirely without danger in our experience provided the technique is carefully carried out. The results of this form of therapy are in direct relation to the thoroughness with which the fever is sustained over a seven or eight-hour period. Poorly sustained temperatures give poor clinical results (see Chart 1). This method opens a new avenue of study into the mechanism of the non-specific reaction.

TABLE 2

Time	G. T. Galvan. Deflect	C. J. Temp. F°.	Treatment No. 2		Current M. A.	Pulse	Resp.	Remarks
			Rect T. C. Temp. F°.	Mouth Temp. F°.				
A. M.								
9:45	9.0R	76.75	99.6	99.3	3400	90	16	
10:00	8.5R		99.7	99.3	3600	94	16	H ₂ O 300 c.c.
10:15	7.0R		100.1	99.8	3600			Sweat slightly Acid,
10:30	3.0R		101.0		3600	110	16	H ₂ O 300 c.c.
10:45	0	76.8	101.8	101.9	3200			H ₂ O 250 c.c.
11:00	2.0L		102.2		3200	122	16	H ₂ O 300 c.c. Sweat Neut.
11:15	6.5L		103.3	103.5	3000			
11:30	9.0L		104.0		Off 11:25	124	24	H ₂ O 100 c.c.
11:45	11.5L		104.5	104.3				H ₂ O 300 c.c.
P. M.								
12:00	12.0L	76.9	104.7			120	20	Cold pack to head.
12:15	12.5L		104.8	103.9				Cold pack to head.
12:30	12.5L		104.8			118	20	Cold pack to head, H ₂ O 300 c.c.
12:45	12.5L		104.8	103.5				Cold pack to head off.
1:00	13.5L	77.0	105.9			114	26	Gal. Recalibrated.
1:15	13.5L		105.9	103.6				Soup 200 c.c.
1:30	13.5L		105.9			120	18	H ₂ O 300 c.c.
1:45	13.5L		105.9	104.4				R. Lower Leg and Hand Exposed.
2:00	14.0L		106.0			120	26	Electrodes off, Blankets back.
2:15	12.5L		105.6					Covered again.
2:30	10.5L		105.1			128	22	H ₂ O 300 c.c.
2:45	10.5L		105.1	103.8				Cold pack to head.
3:00	10.5L		105.1			128	20	H ₂ O 300 c.c. Pack off.
3:15	10.5L	77.2	105.1	103.7				
3:30	11.0L		105.2			124	20	Returned to Ward.
3:45	11.0L		105.2					
4:00			105.0					
4:30			105.0					
5:00			104.8					Diet.
5:30								
6:00			105.0					
6:30			105.0					
7:00			104.6					
7:30			104.4					
8:00			104.2					
9:00			104.0					
9:30			104.0					
10:00			103.7					
10:30			102.8					Part of Blankets Off.
11:00			102.4					
11:30			101.4					
A. M.								
12:00			100.4					Sponge Bath, Alcohol Rub.

CONCLUSIONS

1. Sustained fever therapy in the treatment of refractory cases of arthritis is definitely established as a valuable agent in the management of this disease.

2. A well sustained temperature over periods of seven to eight hours is necessary to insure good results.

3. The method is without danger provided the technique is carefully carried out as outlined.

4. The preliminary report is intended to stimulate an interest in this type of therapy.

We are indebted to Dr. J. S. Coulter for invaluable assistance in this problem. We also wish to thank the nursing staff of Passavant Memorial Hospital for their helpful cooperation.

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THE ROENTGEN EXAMINATION*

EDWARD H. SKINNER, M. D.

KANSAS CITY, MO.

Would that I could measure up to the hopes and ambitions of my radiologic colleagues in accepting this most honorable assignment of representing them before this admirable general assemblage of the organized medical profession of Illinois.

The subject chosen, "The Roentgen Examination," has been my daily life for a quarter of a century. I have witnessed this invisible x-ray strike upon the shining armor of clinical diagnosis, seen it stopped by the mental opacity of those who clung tenaciously to their prejudices, participated in the penetrating victory of the qualified radiological examination.

One wonders whether the victory of the x-ray has been worth the effort? Undoubtedly we are ready to agree that the roentgen examination with qualified interpretation has positive values in reaching a clinical diagnosis and that it has negative values in establishing normality. We are now able to produce such beautiful roentgenograms with such alarming ease that we are about to lull ourselves in a false sense of security. The manufacturer points such a picture of profit and trains your technician while you wait; while you glory in the beautiful exhibits that emerge from your new dark room. You patronizingly exhibit the fluoroscope to your gaping patients and imitate Little Jack Horner with amazing likeness.

Prosperity has placed more roentgen apparatus in hospital and office than the profession can assimilate and use intelligently. The distribution of x-ray apparatus far exceeds the distribution of the knowledge of roentgen interpretation. No other field of medical advancement has spent such huge sums in equipment. There is no doubt but that the profession and the hospital has been oversold in the matter of beautiful x-ray plates. And how they do please the public! How they thrill to the barium filled colon and its appendage, the appendicular semi-colon! How easily they appreciate what they know nothing about! In no other department of medicine, surgery or hospital equipment has there been such magnificent apparatus. Three huge and leading trusts now dominate this field. They have crushed the pioneers into office executives and traveling salesmen. They have promoted the technician almost into the ranks of a qualified diagnostician.

The manufacturers demand and extort greater profit for the patents of tubes, transformer apparatus and film supplies and do this with such grace and magnanimity that even the radiologist has been fooled in the process. Their service journals and technical propaganda has almost a religious tone with its sanctimonious utterances. Their glorification of the technician is hypocritical, and you and I must pay the penalty of our folly in listening to these pharasaical promptings. Ah! The perils of magnanimity!

There have been no restrictions whatever to the sale of x-ray apparatus. The public has fondly believed that the possessor of x-ray apparatus was likewise the possessor of sufficient

*Read before the Joint Meeting of Illinois State Medical Society, May 5, 1931, at East St. Louis.

knowledge to know what he was looking at in the x-ray film. There have probably been more operations and profitable fees seen through an x-ray film than actual interpretation of the shadow values upon it.

The value of an x-ray examination depends entirely upon the amount of interpretative knowledge applied to the shadows. The spectacular qualities of x-ray exhibits before patients have prostituted their clinical values and have subordinated technique to intelligent interpretation. Can anyone say that the field of roentgenology has been sufficiently investigated in a quarter of a century and that there is no further use for roentgen specialists? Is it possible to absorb this new specialty into mere office and hospital equipment when every year, month and day is providing advancements peculiar to the specialty?

I maintain that there is not sufficient knowledge of the science and art of radiology among surgeons and physicians to appreciate and measure its values or conduct. Now can we develop radiologists if we deny them opportunity? With the tremendous competition in medicine will any one choose to participate in any field of medical effort that does not provide future possibilities and a chance to reward ambition and industry? Therefore, I would conjure you to encourage, patronize and reward these physicians who have diligently applied themselves to the study of a worthy specialty. The arguments would carry retributive justice to those who take advantage of their patients by sending them to commercial laboratories and hospitals who do not maintain qualified radiologists with consultative ability. Clinical diagnosis is not machine made and competent radiology depends upon the amount of brains applied to exposure and film and fluoroscopic image.

Furthermore, it can be effectively argued that our patients are being fooled and hoodwinked by many physicians and surgeons, who impress patients with x-ray apparatus in their own offices without benefit of competent radiologic interpretation. Surely such misrepresentation of competency is bound to come to grief and discredit. People demand the right to judge values in medicine as well as merchandise. The glamor of an x-ray examination is giving way to a true estimate of its values. The basic costs of x-ray ex-

aminations are identical but the results are what determine values. The fees for x-ray examinations have not been scaled to competency in interpretation. Interpretation of clinical value to the patient is far and beyond the mere technical x-ray plate. It was one of the patriots that Illinois developed who offered observation that you could fool all the people part of the time and part of the people all the time, but never all the people all the time.

Another phase of debatable custom today is the tendency of hospitals to profit largely through their x-ray departments by reaching out for out-patient radiologic practice and by placing the radiologist upon a salary while the fees are maintained at the level of private consulting radiologists, the hospital appropriating the profits. This is eminently unfair to the practice of medicine and to the development of competent radiologists for the future. You cannot stifle opportunity or ambition or individualism and expect satisfaction today, or progress in the future. These very hospitals are penalizing the practice of medicine, they are sacrificing the socialization of medicine beyond redemption unless these pernicious practices are abated.

There is no question but that the hospital must participate in the income from the x-ray laboratory to provide equipment, maintenance, floor space rental, and all basic expenses. Beyond this any profits are a rebate by the radiologist or the practice of medicine by a hospital corporation. If this scheme of socialization continues in hospital management how long will it take to absorb other specialties and eventually the practice of medicine and surgery? This practice of hospital rebating is as reprehensible as fee splitting and surely we are not going to accept this as a principle no matter how we may assuage our consciences in practice.

Is the specialty of radiology to be merely an historical event in medicine in which you and I are now participating? Will the future see the merging of radiologic practice into laboratory routine and colorless mediocrity? Will the radiologist descend to the technical level and be the slave of shadows? We have watched the rise and fall of pathologists from the time of Virchow and out of the chaos has developed the necessity of affording more latitude, more responsibility, more cooperation with pathologists in order to

guarantee efficiency in this department of medicine. Can we not draw a lesson from this historical parallel? Must we go through a dark age of radiology before the renaissance and inevitable standardization of roentgen practice?

1532 Professional Bldg.

THE VALUE OF MEDICAL DIATHERMY IN CERTAIN TYPES OF DEAFNESS AND TINNITUS*

M. REESE GUTTMAN, M. D., and
MAX KULVIN, M. D.

CHICAGO

Deafness is one of the many perplexing disorders that confronts the otologist and frequently one that may respond but poorly to all of his therapeutic efforts. Depending upon the etiologic factor or factors causing the symptoms of poor or absent hearing, many methods of treatment have been advocated, most of which rest upon a rational basis. However, not a few have been promulgated, without a real background of scientific philosophy, and often are unable to withstand minute scrutiny. Physical agents are relatively modern additions to the physician's therapeutic armamentarium and it was but natural for him to turn to these for aid in the management of deafness. Medical diathermy is probably the most popular of the various energies advocated in the treatment of hardness of hearing, especially in the hands of general practitioners and those otologists who evidenced extreme interest in physical methods of treatment.

About five years ago one of us (M. R. G.) had occasion to employ diathermy in a series of unselected cases of deafness with such uncertain and unsatisfactory results as to abandon it. Within the past year we had the opportunity to collaborate with Dr. Joseph C. Beck in the preparation and contribution of a section dealing with such physical methods in otolaryngologic practice, to a standard text-book on physical therapy. In the collection of the material for this work and in the many discussions with otologic confreres, it was surprising to learn that in addition to the manufacturers of the various apparatus, not a few otolaryngologists, especially

in the United States, Canada and Australia, were enthusiastically advocating it. It is to be regretted, however, that many of the reports dealing with diathermy as a treatment for deafness rested solely upon the patient's subjectively founded statement that he heard better, and frequently took no account of the natural history of the disease. Only rarely were scientifically controlled methods employed for judging its value. It struck us as being of extreme importance to once more investigate this method for which much had been claimed in alleviating or curing the blight of deafness.

A series of patients with a complaint of deafness with or without tinnitus were studied. In addition to the routine examination of the nose, teeth, throat and ears, a careful systemic investigation as well as thorough blood studies were employed. The type and degree of hearing defect was determined by careful conversational and whispered voice tests, the various tuning forks, Galton whistle, Struycken monochord and audiometer. The voice tests and audiogram were repeated at intervals during the course of treatment and were the basis upon which the effect of the diathermy was evaluated.

The treatment consisted of giving three thirty-minute seances of diathermy a week, using heavy foil electrodes over the treated mastoid and the opposite cheek, contact being maintained by a turban bandage. The patient's subjective sensations were employed in judging the amount of current used, it being only rarely necessary to use more than 400 or 500 milliamperes. The hearing was tested at least at weekly intervals under standardized conditions, the electrical constants of the audiometer being especially watched. The following observations were made.

Otosclerosis. Eleven cases of otosclerosis were subjected to treatment with medical diathermy. In all instances there was present a normal appearing drum-head and patent eustachian tube. The Rinne test was negative, the Schwabach markedly prolonged, the lower tone limits raised and the upper tone limits lowered. In all, the hearing defect was bilateral and was accompanied, in most of these patients, by a recurrent tinnitus that was variable in its intensity. In none of these cases did the tinnitus persist over a period of months without some variable interval of diminution or relief. In fact, the tinnitus

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had a tendency towards becoming irregularly cyclic in its periodicity.

The response of these patients to medical diathermy was noteworthy. Nine of the eleven stated that they could hear better after being subjected to the treatment, for the most part saying that they could hear better over the phone or that their friends and relatives thought they heard better. All became more or less enthusiastic in their comments regarding the apparent benefit from this type of treatment. The voice and audiometric tests, however, showed no improvement whatsoever. The other two patients noticed no change in their ability to hear and this was borne out by the actual tests. Were one to evaluate the worth of diathermy in otosclerosis from the patient's subjective symptoms alone he might be led to infer that the method had promise.

The subjective tinnitus was variably affected, apparently benefited in four instances, unchanged in two and aggravated in five. A careful inquiry several months later elicited the fact that those cases in which the tinnitus had been aggravated also showed a recurring decrease and increase in the intensity at varying intervals several times. The same phenomenon was observed in the cases that were improved and unchanged as regards to their tinnitus. The natural history of the variability in the nature and intensity of the tinnitus in otosclerosis could well explain the uncertain effect of the diathermy upon this distressing symptom. Were one to ignore this fact he might be easily led into another *post hoc ergo propter hoc* fallacy that recurs so frequently in medicine.

From these very few cases we were once more forced to conclude that in our hands at least and with the technic employed diathermy had little or no effect upon the hearing and tinnitus in otosclerosis.

Tubal Occlusion. Two cases of deafness subsequent to a tubal occlusion complicating a hypertrophic rhinitis lent themselves for study. The statement has been repeatedly made that diathermy may effect a resorption of exudative products and fibrosis and that the middle ear and eustachian tube may be affected by the so-called diathermy beam by placing the electrode over the affected mastoid and opposite cheek. In both of these cases it was decided to treat one side by

diathermy and the other by the use of inflation and treatment of the tube with ephedrine applied by the Yankauer applicators.

In these two cases the subjective statements of the patients coincided with the results of the voice and audiometric tests. Both patients reported that the side treated by the diathermy was unchanged while the opposite side treated in the manner described above rapidly became normal. While it is undoubtedly true that two cases are little to judge from, yet it is evident that diathermy could not compare with orthodox therapy in the treatment of a hypertrophic eustachian salpingitis. This was further borne out by the fact that the side that did not respond to diathermy was rapidly improved upon institution of inflation and local shrinkage with the Yankauer applicator.

Serous Otitis Media. One case of serous otitis was subjected to treatment with diathermy. It was a classical text-book picture showing a fluid level and foamy appearance after inflation. Bubbling was apparent to the observer during inflation. The fluid did not disappear nor the hearing improve after several weeks of diathermy therapy and it was therefore decided to resort to myringotomy and repeated inflation. These measures were soon followed by an increase in hearing that became normal after a short interval. This was an ideal case in which to test the ability of this physical measure to cause resorption. Its failure to do so is apparent. It is indeed unfortunate that only one such case could be subjected to this form of therapy.

Chronic Otitis Media. Thirty-two cases of chronic otitis media were subjected to treatment with diathermy. These consisted of suppurative as well as healed out states. In the non-suppurative lesions a number of dry perforations varying in size were present. In order to rule out cases that may spontaneously improve it was decided to only so treat those cases that persisted for at least six months.

Twenty-four of the patients believed that they were improved by the treatment, insofar as their ability to hear better. The actual voice and audiometric tests, however, showed that only three of these patients could actually hear better than before taking the diathermy treatment. All of the three cases actually, as shown by the hearing tests, benefited were of a duration of less

than eighteen months. The factor of spontaneous improvement must not be lost sight of. The remaining eight cases that felt no improvement also did not show any by the voice and audiometric tests.

Seven cases in which no improvement by diathermy treatment was manifested had large dry perforations and could receive immediate improvement in hearing by the use of small pledgets of cotton as an artificial eardrum. It is apparent that diathermy does not offer a great deal in the treatment of hearing defects due to chronic inflammatory processes within the tympanum. The psychic effect of this rather spectacular form of therapy is as evident in patients suffering from chronic otitic lesions as in those afflicted with otosclerosis. It is a striking fact that man is so constituted that he may easily be led to believe what he wants to believe.

SUMMARY

Forty-two cases of hardness of hearing were subjected to treatment with diathermy. In nine cases of otosclerosis, two cases of tubal occlusion and one case of serous otitis no benefit was observed as indicated by carefully controlled voice and audiometric tests. Only three out of thirty-two patients with chronic otitis media were improved and whether this was actually due to the treatment is open to question. The effect of this form of therapy upon tinnitus in otosclerosis was also ineffectual. Thirty-three of the forty-two patients believed that they were benefited by the treatment and could hear better. Yet actual tests showed that this was true in only three instances. The improvement was therefore only apparent and not real. This method of treatment makes a decided impression upon the patient's mind and any benefit must be of a psychic or suggestive nature. The value of diathermy in the treatment of deafness and tinnitus must as yet be proven.

185 N. Wabash Ave. 1 N. Crawford Ave.

DISCUSSION

Dr. R. Sonnenschein, Chicago: I am glad to have had the privilege of reading Dr. Guttman's paper before the time of the meeting. Whenever a new procedure is presented to the medical profession, there is a great tendency to marked enthusiasm and widespread application of the same. In many instances, experiences have shown that while at first great claims were made for new methods, as time goes on the pendulum swings

the other way and it is found that proper application is often rather restricted.

When Roentgen rays were first announced to the world and were used in this country, medical literature was soon filled with reports of marvelous cures of almost every known ailment. Later it was found that not only were these hopes not realized, but it was shown that in many instances, if not properly used, the rays themselves caused serious burns and other damage to tissues and individuals. History seems to repeat itself. Not so many years ago a number of new methods in physiotherapy were presented and many new appliances perfected. Hopes ran high; we heard and read of marvellous results in almost every direction. Now that opinions and experiences are crystalizing, we find that some of these procedures have only a limited sphere of usefulness. It is very gratifying to me, therefore, to note the conservative tone of Dr. Guttman's very timely paper.

It is true that one should not always judge things a priori, as experience may contradict philosophical reasoning. Nevertheless, when one considers the nature of the pathology in a condition like that of otosclerosis, it would seem inconceivable at the outset that the application of increased heat to the tissues would bring about changes either at the foot plate of the stapes or in other parts of the bony cochlear capsule. Likewise, when there has been considerable destruction and interference with the function of structure of the middle ear, it likewise seems impossible to restore these parts by the use of heat. When definite bony changes have taken place, or definite and marked cicatricial changes in soft tissues, medical diathermy cannot restore them. It is entirely different when one considers a subacute or chronic inflammatory change in the soft parts or in the ear. Here it is conceivable and might seem rational that considerable heat within the tissues might produce changes beneficial to the structure and therefore the function of the parts.

The moral of the whole movement of physiotherapy with special reference to the ear, nose and throat, appears to me to be that it is necessary to apply good common sense when considering the rationale of any procedure in diathermy. By a careful use of such a procedure in certain cases when a definite diagnosis has been made, or where the results are checked by a careful examination, it is possible to note whether beneficial results have or have not occurred. It is a well known fact that many patients, especially those afflicted with otosclerosis, are *subjectively* improved by any measure that is applied or any treatment that is instituted, but when examined carefully it is found that there is *no objective* improvement. As a rule, within a few weeks after the special treatment has been begun, whatever it may be, the patient loses the apparent improvement first noted on changing treatment or doctors. It therefore behooves us not to be too enthusiastic merely because a patient says he believes he hears better. It is necessary to examine him carefully before and after a series of treatments in order that one may know definitely whether real improvement has or has not

taken place. With diathermy or with any other procedure that is proposed to the medical profession, the old rule holds true as enunciated in Holy Writ—"Prove all things and hold fast to that which is good."

Dr. A. R. Hollender, Chicago: I am in complete agreement with the essayist in his statement that diathermy is of no value in otosclerosis. I have frequently emphasized this, but I have repeatedly been misquoted. I also agree that it is valueless in old tubal obstructions. After several years experience in the application of physical therapy about the head, I am convinced that these two types do not respond; in fact, in some cases the condition is aggravated.

I am not so sure, however, that these negative results apply to all types of middle ear deafness. We do not know just what factors are aids to our therapy; some cases of otitis media have responded under diathermy but just what the role of diathermy is in the improvement cannot be definitely stated. The technique applied by the essayist may have been at fault. He does not state for what time his patients were under treatment. This is an important factor.

At the present time all we can fairly say of the middle ear cases is that the therapeutic test is the only fair test; the surface has only been scratched so far as the possibilities of treatment by diathermy is concerned in otology.

Dr. W. V. Mullin, Cleveland: I am much interested in what Dr. Guttman said, and I agree with him wholeheartedly. I think he has brought several things out clearly—the susceptibility of these poor people to any type of quackery which may offer help, and the implicit faith these people have and a great many doctors have, in anything electrical. It always brings out that feeling expressed by—"Manana"—the hope that something will bring results, tomorrow if not today. As Dr. Hollender said, the surface has only been scratched in this therapy. That has been going on for many years, as you and I can remember. You know that tuberculosis has been treated by x-ray, all types of skin diseases, so deafness came in for its share, and there is always one man in every part of the country who has established himself in connection with each new fad, and has these people coming from a long distance to have a harmless little exposure to x-ray to cure their deafness. And they will go. If you promise them anything they will come to you. There is no field that offers itself to the charlatan more than deafness. As Dr. Guttman said, you take their word for it and they feel better, but you test them and find they are exactly where they were before.

Dr. M. R. Guttman, Chicago (closing): Dr. Hollender brought up the question regarding the technique employed. This technique was taken from the textbook he wrote in collaboration with Dr. Cottle. We followed it as closely as we could, and while we did not treat the patients for six months to a year, we feel that after three months, without accomplishing much, we were justified in discontinuing the treatment.

PHRENIC-EXERESIS IN THE TREATMENT OF UNILATERAL PULMONARY TUBERCULOSIS*

GEORGE M. LANDAU, M. D.,

Radiologist, Chicago Memorial Hospital, Cook County Infirmary Hospital, and Cook County Tuberculosis Hospital

CHICAGO

It has been my good fortune in the past 10 years to be associated with the Cook County Tuberculosis hospital as radiologist, during which time some 15 or 20 thousand x-ray films of pulmonary tuberculosis in its various stages it has been my province to observe. Among the early x-ray cases were those treated by the time honored method of rest, fresh air, sunshine, good food and tubercule, still later those treated by means of artificial pneumothorax and of recent date these methods supplanted by certain surgical procedures, namely "Phrenic-Exeresis." Should the foregoing remarks tend toward enthusiasm, it is that enthusiasm which in my opinion is borne out by the facts as revealed on the x-ray film following this surgical procedure and because in the opinion of the writer seeing is believing, and since in all his experience with the aforementioned methods of treatment no ray of hope of a cure has shown through the mottled and cavitated lung with such promise until the advent of "Phrenic-Exeresis" in unilateral pulmonary tuberculosis. You as well as I have seen the early active lesion involving only a small area disseminate in spite of all known treatment, eventually involving the entire lung and by extension the opposite one as well and ending our study in most instances of this so-called early incipient case at the post mortem table.

If operative procedures and the results obtained by them show that surgery has an immense value in the treatment of pulmonary tuberculosis, supplementing sanatorium treatment then there is every reason to justify the enthusiasm following the results of such treatment.

If we can show by our records cases of clinical cure or arrest such as the following: the patient, a physician without previous symptoms, has a severe hemoptysis, x-ray examination revealing a large cavity in the right lower lobe, positive sputa, continuous high temperature which in

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spite of rest in bed continues and on repeated Roentgen examination reveals an increase in size of the cavity and lower lobe mottling, following which right phrenic extraction was done and immediate improvement was noted, i. e., lessened sputa, drop in temperature and diminution in size of the cavity, and three months later a gain of 25 pounds in weight, normal temperature, negative sputa, absence of mottling and practically complete obliteration of the cavity—then this procedure must merit our attention and serious consideration and the remarks made cannot be attributed entirely to over-enthusiasm.

The surgical treatment of unilateral pulmonary tuberculosis has been termed radical treatment; if so it is unquestionably time that some radical form of treatment be instituted to stem a disease whose mortality rate is certainly not decreasing from the present method of treatment nor in the proportion to the advancement of science in the treatment of other diseases which not so long ago were likewise termed radical, surgical or therapeutical treatments. The argument that phrenic-exeresis may produce death is not sufficient argument against this surgical procedure not any more than an argument against the surgical removal of an appendix or gall bladder which may lead to the death of the patient, for if in the foregoing surgical procedures these diseased organs are not removed, they will cause death and so will, and does, pulmonary tuberculosis in spite of rest, fresh air, good food and sunshine.

In the program as inaugurated by Drs. Otto C. Schlack and Jerome R. Head, medical superintendent and surgeon of Oak Forest Tuberculosis Hospital, respectively, there has been no operative mortality or morbidity and no patient has been made worse by the treatment and no consideration has been a recognition of the type of patient with whom they dealt, these patients being drawn principally from the laboring and poor classes of a large metropolitan area. Since rest is the one essential factor in hoping to attain a cure or arrest, what better means have we at our disposal with practically a negligible element of risk than phrenic evulsion. Phrenic-exeresis was primarily instituted as a preliminary to artificial pneumothorax and thoracoplasty. I believe that the results obtained in exeresis have by far surpassed its original intent and purpose and where it was at first supposed to be merely an

adjunct it is proving itself to be a curative agent in itself.

As a result of destruction of the phrenic nerve, a paralysis of the dome and atrophy of the muscle fibers result. As a result of this atrophy the dome rises into the thorax partially on account of the intra-thoracic negative pressure but mainly because of the intra-abdominal pressure. Maximum rise is not observed until complete atrophy occurs and the rise varies greatly in some only 1 or 2 cm., in others 7 to 8. These changes further decrease the size of that half of the chest and so allow to a measure collapse of the base of the lung relaxing all tension from the structures in the immediate direct or indirect contact with the upper surface of the dome, collapse of the cavities even those in the apex, abolition of tonic contraction of the muscle, relaxation of the strain on adjacent structures, the abolishment of cough so characteristic of diaphragmatic irritation and the removal of the dragging, ache and pain associated with basal adhesions.

The realization of these changes enables one to appreciate how great is the field of usefulness of hemi-diaphragmatic paralysis in the treatment of pulmonary tuberculosis.

Rest it is admitted is the specific treatment against progression and re-activation of pulmonary tuberculosis but do we really put at rest a lung by merely confining the patient to bed? It must be admitted that as long as the diaphragm rises and falls there is no rest to the affected part. In the treatment of bone tuberculosis not to speak of our fracture work rest by means of splinting is the accepted method of treatment and cure. What better method of splinting the lung than by means of phrenic avulsion. The argument that rest by means of pneumothorax is more acceptable and less hazardous does not hold true. Artificial pneumothorax is a dangerous practice even in the hands of the most skilled. Pleural complications and air embolism are only two of the more serious complications which give a high mortality rate. The risk of producing pleural complications or air emboli is incurred with each insufflation or at least once a week. Careful and prolonged supervision is essential in maintaining complete collapse and where once the lung is permitted to expand by failure of continued complete collapse, the formation of adhesions precludes any further attempted collapse lest serious injury and even death by

hemorrhage from tearing these adhesions occurs. Further disadvantages of artificial pneumothorax is the fact that in 95 per cent. of all cases an effusion results and not infrequently a pyothorax. Neither does the argument that the lung at the termination of this method of treatment re-expands and resumes its normal function hold true. On the contrary the lung suffers as serious and permanent disability as it does in phrenic evulsion plus a displacement of the mediastinum and great vessels, multiple adhesions, immobilization of the ribs and a narrowing of the pleural cavity. Dr. Head and others are of the opinion that no lung should be permitted to come out following termination of treatment of artificial pneumothorax until phrenicotomy has been performed, for it is their belief that a lesion which has become encapsulated while the lung is collapsed is less securely healed than one which has become closed with the lung expanded and which does not have to be subjected to stretching and tearing on re-expansion.

The question arises presuming phrenic evulsion fails to stem the disease in the affected lung or spreads to the opposite lung what procedure then is left open with a permanently paralyzed diaphragm. Phrenic-exeresis does not preclude pneumothorax on the paralyzed side nor in the opposite side as has been definitely attested to by Vajda who in instances of bilateral tuberculosis does not hesitate to do an exeresis on one side and a pneumothorax on the other. While our records are still incomplete, the statistics at this time on 100 cases are as follows: "Cures 35 per cent., improved 60 per cent. and unimproved 5 per cent." Wirth and VonJaski in a study of 600 cases of operations on the phrenic nerve state in their conclusion that from the medical, social and economical standpoints the preferred treatment in unilateral pulmonary tuberculosis is phrenic evulsion, and that it is unquestionably the method to be used in combination with either pneumothorax and thoracoplasty and is a necessary form of treatment in the correct handling of patients suffering with unilateral tuberculosis. Raycroft states that where cure or arrest can be obtained by compression therapy no time should be lost in undertaking this most valuable means of treatment.

H. M. Davis has come to the following conclusions as indications for phrenic evulsions for all cases of basal tuberculosis, for cases of ex-

tensive tuberculosis with cavitation even in the apex as an accessory to pneumothorax to lengthen refills, to check pleural adhesions in pneumothorax, for the symptomatic treatment for cough and dyspnea and preliminary to thoracoplasty. Drs. Wallace Frank and O. O. Miller draw the following conclusions in their study of 100 cases as follows: 40 per cent. of far advanced cases showed improvement; in 8 the sputa became negative for T. B. bacilli and in 8 the cavities disappeared. They state that a good phrenicotomy is better than a poor pneumothorax. It is less hazardous, less discomforting and unattended with complications and that the good results of phrenicotomy are not dependent on the location of the pathology but rather on the retractability of the pulmonary tissue.

The authors on this subject are in accord that this form of treatment may not be the best form but all are agreed that until experience proves otherwise the surgical treatment of pulmonary tuberculosis has immense value and from their observations they are convinced that surgery is indispensable in supplementing sanatorium treatment.

It is probably not within the province of the radiologist to draw conclusions or elucidate on the indications and contra-indications to phrenic exeresis other than those conclusions which he deducts from the Roentgenogram itself but certainly after following such a series of studies of these cases as we have one cannot help but conclude that in a disease as serious as pulmonary tuberculosis and in which such an agent as this has proved of such great therapeutic value, I do not see how one can escape the conclusion that this remedy should be applied as completely and effectually as possible regardless of the fact that the patient may get well without it, and as has been so ably expressed by Drs. Schlack and Head with the sole instruction that the risk and disability incident to the treatment be not greater than that incident to the disease.

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DISCUSSION

Dr. Otto C. Schlack, Chicago: I am happy to see the trend toward phrenicoexeresis replacing artificial pneumothorax as first on the list of surgery in tuberculosis. Artificial pneumothorax has held first place for years, but phrenicoexeresis is rapidly replacing this as shown by the slides. Of 120 cases we had only one bad result with phrenicoexeresis, that being a Horner's Syndrome. I had occasion to see a man doing a phrenicoexeresis who did not have much experience, and in evulsing this nerve, which would happen to the best in doing this operation, the subclavian artery was torn and severe hemorrhage and death followed. I believe these are the cases that bring up the death rate.

Now, in comparing artificial pneumothorax with phrenicoexeresis, in 106 cases, 3.77 per cent. showed symptoms of air embolus. We were fortunate enough not to have air embolus and death. In artificial pneumothorax this must be carried on for a period of two to five years before allowing the lung to expand. The possibilities of complications in artificial pneumothorax are greater, regardless in whose hands the artificial pneumothorax is done. Of these 106 cases of artificial pneumothorax, fifty per cent. developed fluid in some minute form or in large quantities, and of these 106 cases, 16, or 20.5 per cent., developed pyopneumothorax. Of these sixteen cases of pyopneumothorax, eight died, two were unimproved, and two improved. Of these sixteen cases, four were treated with the closed method of hyclorite being made ready for thoracoplasty. If a phrenicoexeresis is done first with no results, you may then give artificial pneumothorax. If artificial pneumothorax gives no results you are then ready for thoracoplasty, because phrenicoexeresis had been done before artificial pneumothorax was started. I would advise that a phrenicoexeresis be done first, and if necessary you can always give gas.

In closing, I wish to thank Dr. Landau for his splendid paper given here, and I know that the trend of phrenicoexeresis will spread all over the country as it has been doing in the past.

Dr. Adolph Hartung, Chicago: I enjoyed this paper of Dr. Landau's very much. However, I think that there is one phase of this subject which has not been sufficiently stressed by him, especially as regards its interest to us as roentgenologists. If we were all working with chest experts or men who make a special study

of tuberculosis, we could almost take the part of the technician and furnish our films to the operator, and he could draw his own conclusions or make his own diagnosis. As a matter of fact, I have done a good deal of this phrenicoexeresis and thoracoplasty roentgenography in conjunction with Dr. Hedblom's work, and I seldom aim to make any interpretation of findings to him.

As roentgenologists, the phase of this subject that should interest us is calling attention to the cases which are suitable for this class of work. We, of course, work largely with general practitioners and our interpretations to them should not end with the interpretations of findings in the form of the probable lesion. I think the most important thing is that we should point out to these men the advisability of this kind of surgical procedure in connection with certain types of tuberculous lesions, and that is what the roentgenologist should get out of a paper of this kind.

Dr. Harold Swanberg, Quincy: I would like to ask a question. I noticed on one of the slides that a phrenicotomy was done on a patient with bilateral pulmonary tuberculosis. I would like to have Dr. Landau emphasize the indications for phrenicotomy particularly when the opposite lung shows tubercular involvement.

Dr. Otto C. Schlack, Chicago: Regarding the case which was shown here, the physical examination is the thing that guides us. The physical examination shows us which side to work on. If there is an extension to the opposite side, we always attempt to do the phrenicoexeresis on the side with the most activity, and in doing so the opposite side rapidly clears up. If you are going to ask me why, I can only say that if you reduce the activity on the side of the phrenicoexeresis 25 per cent. to 30 per cent. the toxicity is lessened and the patient has less toxins to take care of and the opposite side has a tendency to clear up. Not only in one, but in thirty or forty cases, this has been the result as we see it.

Dr. George M. Landau, Chicago (closing discussion): I agree with Dr. Hartung that it is the duty of the roentgenologist to explain to the general practitioner in cases of early pulmonary tuberculosis that a phrenicoexeresis is indicated in his particular case pointing out to him the minimum dangers of this particular operation and the benefit the patient will derive from it in either arrest or cure.

I wish now that I had brought with me slides to illustrate a case in which a patient had a hemoptysis, x-ray examination revealing a small cavity in the apex of the lung. His physician prescribed the usual treatment of rest, fresh air, good food and tuberculin. Re-examination some months later revealed a rapid dissemination of the pathology throughout the entire lung, all this in spite of the fact that he had gained 40 pounds, and with the exception of a slight shortness of breath and weakness attributed to his rest in bed felt and looked the picture of health. In view of the rapid dissemination I am unable to convince the physician that a phrenicoexeresis is the proper procedure even in this late stage. He is of the opinion that this patient will get well in spite of the dissemination

and points to his gain in weight as the one chief factor for this contention, but we know differently.

As to the case of bilateral pulmonary tuberculosis in which an evulsion was performed, I am going to ask Dr. Schlack if he can recall the particulars in this case. I do not believe it is the province of the radiologist to give the indications and contra-indications, that being left entirely to the physician or surgeon.

SOME PERTINENT ASPECTS OF HIGHER EDUCATION*

EDWARD H. KRAUS

Dean of the College of Pharmacy, University of Michigan

ANN ARBOR, MICH.

As our civilization has advanced, the periods of educational preparation demanded for the various professions have been steadily lengthened. Graduation from high school and from three to six or seven years of collegiate training are now generally required for admission to our health professions. Indeed, among the candidates for degrees here today there are many who have spent a whole decade in high school, in collegiate study, and in formal professional training in preparation for their life's career.

While this decade has been one of steady progress for them in their academic and professional education, it has, however, been a period of most extreme economic, industrial, and educational changes in this country and in the world as a whole. A consideration of some of these changes and their influence on higher education, especially as they refer to the professions dealing with the conservation of health, may not be out of order at this time.

Ten years ago, this country was in an era of unprecedented prosperity. As one of the results of the great war, orders in large volume came to us from all over the world. Unheard of industrial expansion followed. It was during these years that unquestioned world leadership in industry and finance passed from Europe to the United States. As a consequence, conservatism and moderation were soon ruled out of court, and uncontrolled optimism became the order of the day. A period of wanton and reckless speculation with "the sky as the limit" followed.

Then suddenly, the country was plunged from the high crest of prosperity and optimism into

the deep trough of the most violent crash known in the economic history of the world. Pessimism, despondency, and even hopelessness and futility seemed to gain the upper hand in industrial and financial circles. And just now, after a period of careful inventorying, much sober thinking and widespread attempts at stabilization, we seem to be slowly emerging into an era of saner living and thinking, in which it is hoped that less emphasis will be placed upon the material and temporal things and a greater appreciation developed for the eternal, spiritual values of life.

During the early and middle twenties, American industrial, social, financial, and educational methods and policies attracted world-wide attention. They were studied by experts and commissions from all over the world, who came to our shores to gain first-hand knowledge of the secret of our success and prosperity. Among the very first to study our methods, policies, and institutions, intensively and critically, were the Germans. As a defeated nation, with industry and foreign trade wrecked, and burdened with huge debts, they were faced with the great problem of rehabilitation. The impressions and reports of the German experts and commissions appeared, upon their return, in a steady stream of publications ranging from small pamphlets to volumes of impressive size, and were in the main most favorable to us.

As a result, numerous American books on manufacturing processes and business administration were translated. Many of our methods were soon installed in some of the leading German industrial plants. Also, American products were imported in increasing quantities. This had progressed to such an extent that in February, 1926, while in Germany, I was taken by a German engineer from Berlin to Eberswalde in a Willys-Knight car to inspect a new brass and copper rolling mill with a lay-out and installation patterned after that of one of our great mills at Bridgeport, Connecticut. Moreover, the administration building of this great concern was equipped with typewriters, adding and calculating machines, and other office devices imported from this country.

All this was in striking contrast to the attitude of the leaders and thinkers, and of the Germans as a whole, at the beginning of the twentieth century. In those days, our country was

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looked upon as being an excellent outlet for goods labeled "Made in Germany," but of little significance in industry, education, or world affairs.

The lead taken by the Germans was soon followed by the French, English and others. The expression the "Americanization of Europe" was soon read and heard on every hand by the traveler abroad. Indeed, it was shortly followed by the "Americanization of the World." But, alas, our prosperity was not enduring. On account of our prominent world position the economic crash in this country was felt the world over. Accordingly, other nations are also passing through experiences similar to ours of the past two years. This period has been, and still is, the world over, one of the severest testing of the character not only of individuals, but of nations. We all hope a new and better world may emerge.

With this hasty and quite incomplete survey of the industrial and economic conditions of the past decade before us, let us now briefly consider some of the things that have transpired in the realm of education. For no matter what the economic status of the municipality, commonwealth, or nation may be, the training of the youth must go forward. Indeed, this training should be on a progressively higher plane if the younger generation of today is adequately to meet the problems of our civilization that is ever becoming more complex.

From the very beginning an intense passion for education has characterized the American people. As soon as they possibly could, the early settlers established schools for the education of the younger children. And only sixteen years after the pilgrims landed at Plymouth, Harvard College, our oldest collegiate institution, was founded. Indeed, during our colonial and expansion periods schools and colleges followed closely the westward movement of our pathfinders and settlers. This interest in education has constantly increased so that today it is greater than ever before.

During the decade just closed, the growth in education in the United States has been most extraordinary, especially at the high school and college levels. In this period the number of pupils in our elementary schools increased by about three million. High school enrollment nearly doubled, so that today nearly five million young men and women are studying in our sec-

ondary schools. This was to be expected for the facilities for education at this level have been expanding at a rapidly increasing rate since 1890. And, in the field of higher education our colleges and universities have been taxed to the utmost during this ten-year period, for here, too, the enrollment has shown an increase of about 100 per cent.

In the early days of our country we were chiefly concerned with providing educational facilities at the elementary level, so that the rudiments of education might be made available to all of our children. Of course, high schools and academies, and colleges and universities were established and developed, but the number of our young people availing themselves of the opportunities at these higher educational levels was rather restricted. But about 1890 greater emphasis began to be placed upon the need of high school education for the great mass of our young men and women. New high schools were established at the rate of one a day, and that has continued almost uninterruptedly down to the present time. With rapidly increasing numbers graduating from our secondary schools, the attendance upon our colleges and universities went up by leaps and bounds. Since 1900 there has been an increase of about 50 per cent. in the enrollment in our elementary schools, an increase of about 700 per cent. in our secondary schools, and one of nearly 600 per cent. in our colleges and universities.

Today about one in every four of our population is attending some educational institution. We have more students in our high schools and our colleges and universities than all the countries of the rest of the world have in similar institutions. These figures are not only interesting to us but also very impressive to foreign educators.

Thus, in the spring of 1928, for the first time in history, a group of thirty men and women representing all phases of education in Germany spent, with great profit, three months in this country studying all phases of our educational methods from the kindergarten to the graduate school. And only a few months ago Sir Michael Sadler, Master of University College, Oxford, England, in commenting in England upon the progress of education in this country, pointed out that in the United States about one out of

every 120 of our population is a college or university student. In Germany the ratio is only one out of 650, in France one out of 700, and in Great Britain one out of 1,000. In fact, in the State of Illinois with a population about one-sixth of that of Great Britain there are twice as many students in its institutions of higher education than in all the institutions of similar character in England, Scotland and Wales.

Moreover, while thirty years ago it was almost imperative that students, desiring advanced academic and professional training, spend some time in foreign study, today this is not so necessary because of the great educational advances we have made on the university level. Formerly, but few foreign students came to our shores for study, but today, as Duggan informs us, more than 10,000 students from other countries are enrolled in our colleges and universities. They come from all parts of Europe, Asia, and Latin America. In fact, this group is twice as large as the number of American students now studying abroad.

These very significant facts clearly indicate that our people have a passion for education, and that the training of our youth has long been recognized as a fundamental function, an essential safeguard, and a chief responsibility of a democracy such as ours. Indeed, this passion is greater than ever before. Today we spend well over three billion dollars annually to provide educational facilities for the somewhat more than thirty million who are enrolled in our various schools and colleges, staffed by a million teachers. Moreover, the amount thus spent has doubled during the decade we are considering.

While this sum seems to be enormous it amounts to only twenty-five dollars per capita. Indeed, it is no larger than the amount that is spent annually in this country for life insurance. And recent investigations by the Bureau of Education clearly indicate that although we place strong emphasis upon education, we spend more than twice as much for the luxuries of life, such as tobacco, confectionery, theatre, jewelry, perfumes, and cosmetics; moreover, our annual expenditure for the purchase of new automobiles is much larger than what we pay for education.

In discussing education in the United States the eminent English economist, J. Ellis Barker, in his critical survey entitled *America's Secret*, says: "The United States owe their vast wealth

not merely to the great extent of their territory and of the natural resources contained in it, but also, and particularly, to the energy and ability with which the resources of Nature have been exploited by the people. The energy and ability of the American people are very largely due to the practical and thorough education and character training which they have received. Their abilities are rather acquired than inborn." Barker says further: "America's economic success is largely due to the fact that, in the words of the late Mr. Choate, 'Education is the chief industry of the nation.'"

Although the decade, just passed, has been marked by the greatest interest and expansion in educational affairs and facilities in the history of the country, or, for that matter of the world, it has also been a period during which education in all its phases has been subjected to intense criticism and severe testing. The objectives and the value of many of our educational projects and methods were repeatedly questioned, for growth and expansion do not necessarily result in genuine and permanent advance.

Much of this criticism came from within the ranks of the educator. Naturally, some of it was sincere and constructive, but much was not. Fortunately, the various groups of stalwart men and women who have had long experience in shouldering the burden of educational problems and have been the motive power behind some of the great forward movements can usually, and without much difficulty, differentiate between the sincere effort of tried educators for advancement, and the fanatic agitation of those, who commonly are young and more or less inexperienced, but have exceedingly active minds and vivid imaginations. It is members of the latter group who are constantly advocating that we throw into the discard the existing order and substitute all manner of educational will-o-the-wisps.

It was only natural that our rapid expansion should permit such pseudoeducators to flourish. The decade has, hence, seen many fanciful experiments tried at all levels of education, and then discontinued a few years later. One may, however, safely say that we are today, on the whole, educationally much wiser and farther up the ladder of progress than we were ten years ago.

Of special interest to the group here today is the splendid progress that has been made during the last decade in advancing the educational

requirements for admission to the health professions. At present we take great pride in the high standards that now, or shortly will, obtain in medical, dental, pharmaceutical, and nursing education. But we commonly forget that the present advanced preparation demanded for these professions is of comparatively recent date. Indeed, as recent as sixty years ago, the teaching of medicine in this country was considered a social disgrace. At that time the requirement for graduation in medicine at Harvard University, and at other leading medical schools consisted in the attendance upon two sessions of lectures of four months each. The degree of Doctor of Medicine was usually conferred after the passing of a nominal examination and upon the presentation of evidence of having studied medicine for three years, including the time spent in medical school. In 1870, shortly after he became president of Harvard University, C. W. Eliot endeavored to persuade the medical faculty of that University to advance its requirements for graduation. Among other things, President Eliot suggested that a written examination be substituted for the final five-minute oral examinations given by the professors in charge of the various subjects. The dean of the faculty, however, immediately pointed out that it would be impossible to hold written examinations for he knew that the students of medicine could not write well enough. What marvelous advances in medicine and medical education have been made in these sixty years! In fact, these advances are greater than those made by any other profession.

In considering this great progress in medical education we must not overlook the fact that much of it has taken place since the famous Flexner study, made in 1910. During the decade we are discussing there has been continued advance. And in spite of the present high demands, medical study had increased in popularity. We are told that last year more than 800 American students applied for admission to one of the medical schools in Scotland, and that the number of physicians graduated in 1930 by the sixty-six approved medical schools on the four-year basis was as large as the number that completed their medical training twenty years ago when we had twice as many institutions. Indeed, today the United States has more physi-

cians than any other of the leading countries for our ratio is one doctor to every 800 persons; while in Switzerland it is one to 1250, in England and Wales one to 1490, in Germany one to 1560, in France one to 1690, and in Sweden one to 2860.

Dental education has also marched forward. The advances in this field are of even more recent date than those in medicine. Although the first college of dentistry in the United States was established in Baltimore in 1840, the teaching of dentistry was not recognized by any of our well established universities until 1867, when the Harvard School of Dentistry was organized. Similar units were then established at other leading universities. Interest in this phase of the conservation of health increased, and the number of young men and women preparing themselves for the profession of dentistry grew rapidly.

Although the requirements for admission to the study of dentistry and for graduation were advanced from time to time, the standards lagged much behind those of medicine. During the decade we are discussing Dr. W. J. Gies made his searching and constructive study of dental education under the auspices of the Carnegie Foundation for the Advancement of Teaching. Just as advances in medical education were greatly stimulated by the Flexner report, so the study by Gies contributed in no small way to the adoption of the present requirements of one or two years of college training in preparation for the professional work of three or four years. These advances have placed dentistry on an exceedingly high plane. By the general public the profession is held in high esteem, for the importance of the care of the teeth in the conservation of health is more intelligently understood than ever before.

The most striking progress during the ten years that we have been reviewing has probably been made in pharmaceutical education. Although historically pharmacy may be considered the mother of both medicine and dentistry, she has permitted her progeny to outdistance her in educational advancement and achievement, as well as in the recognition, at present, given by the public to these health professions.

Ten years ago many colleges of pharmacy in this country were admitting students

with but two years of high school preparation, and graduating them after two years of professional study. The demands, however, of pharmaceutical educators, especially those associated with our state universities, were such that the requirements for admission to and graduation from the colleges constituting the American Association of Colleges of Pharmacy were steadily advanced, so that today all colleges of the Association demand high school preparation for admission and already more than one-third of them have made the four-year course obligatory for graduation. In 1932 this requirement will become compulsory for all members of the Association.

During this decade a study of pharmacy, in many ways comparable to that of dental education made by Gies, was conducted under the auspices of the Commonwealth Fund by Dr. W. W. Charters of Ohio State University. Although Dr. Charters confined his investigations chiefly to the functions and responsibilities of the neighborhood pharmacy, his observations on other phases of the profession and upon pharmaceutical education were most significant and helpful. The Charters report contributed very materially to the extraordinary advance in pharmaceutical education made during the past ten years.

Observations similar to those which have been made for medicine, dentistry, and pharmacy might also be cited in the case of nursing education. Better preparation and higher standards for the professional training have been insisted upon. Marked advances have accordingly been also made during the past ten years in this very important phase of the promotion and conservation of health.

Not only has there been marked improvement in the character and the quality of the students entering and being graduated from our institutions giving instruction in these disciplines, but much higher standards have also been set for those seeking teaching positions in these fields. Then, too, the teaching facilities have been greatly improved, for at many of our universities splendid new buildings and laboratories for instruction in medicine, dentistry, pharmacy and nursing have been built during this decade.

Furthermore, the period has been marked by unusual progress in hospitalization, not only as to the number of new hospitals, but also with regard

to generally improved facilities. The planning and constructing of the very beautiful and efficient medical centers in many of our leading cities give striking testimony to the fact that our citizenry is more vitally interested in health than ever before, and that the health professions are earnestly striving to render a wider and better service to a larger proportion of our population. Indeed, the older idea of the hospital as a "house of death" has given way to the newer and more appropriate conception of it as a "house of life."

In the furthering of these newer conceptions of health the federal government has aided materially through its national conferences on child welfare, by the work of the committee on the costs of medical care, and by the splendid assistance given by its health service, and its many other agencies. And the very important activities of such organizations as the Red Cross, the Rockefeller, Milbank and Commonwealth Foundations must not be overlooked.

That our people consider the promotion of the physical health of our communities as one of their most precious assets, and accordingly desire to learn how to live better and more effectively, is clearly evidenced, I believe, by the fact that as a nation we spend more than three billion dollars a year for medical care. This sum is as large as that expended for all educational purposes. Moreover, our leaders fully realize that if the public is to receive the best possible service there needs to be close and sympathetic cooperation on the part of the great health professions—medicine, dentistry, pharmacy, and nursing.

The decade under review has also been marked by great advances in scientific medicine for many extremely important discoveries and contributions have come from the research laboratories of our universities and our great pharmaceutical manufacturing plants. All I need to do is to remind you that insulin in the treatment of diabetes and liver extract in pernicious anemia were developed during these ten years. Furthermore, the Kahn and Dick tests are also contributions of this decade. The present-day emphasis on vitamins, the synthesis of thyroxin, the intensive research on hormones, and the extensive production of efficient synthetic organic medicinals are developments of the last few years. Many other achievements might be cited, but enough has been said to show that the scientific advances

made in the various fields related to health have been extraordinary during the period that you, who are candidates for graduation here today, have received your training in secondary school and college.

I hope that this survey, although very hurried and quite incomplete, has clearly indicated that in spite of the recent serious economic and industrial reverses in this country, education and scientific achievement have moved steadily forward. And that it is also evident that the last decade has been marked by advances of far-reaching importance to the health professions. Accordingly, one may sincerely affirm that the candidates for graduation here today have had the benefit of the best facilities ever provided by this University in their respective fields. You will enter upon your life's work with an excellent preparation and a superior scientific knowledge. That you are aware of this, I am confident. I am also confident that while you rejoice that you have been so privileged, you are cognizant of the enlarged responsibilities that these advantages impose. It is therefore incumbent upon you constantly to strive to render to humanity a service as full, efficient, and self-sacrificing as has ever characterized your professions. To you, much has been given, and from you, much will be expected.

DUST SENSITIZATION*

L. BENNO BERNHEIMER, M. D.

CHICAGO

In 1921 R. A. Cooke reported his observation of specific sensitiveness to house dust in an asthmatic. He believed that dust contained an unidentified factor which did not agree by test with any other known extract. Two years later Spivacke and Grove showed that dust was the exciting cause in an experimental study of a case of asthma. They confirmed Cooke's opinion that dust contained a specific atopen which produced a local skin reaction in the individual whose blood contained the corresponding reagin, and demonstrated by the Prausnitz Kustner phenomena that the dust atopen was not a product of horse dander, to which latter material the individual was also slightly sensitive. Storm and Brutel reported excellent clinical results in asthma when in selected cases desensitization for

various specific atopens was combined with desensitization to house dust. Feinberg reported four cases of asthma which showed marked improvement after desensitization to house dust; one of these cases showing a sensitization to no other protein.

Rowe studied 162 asthmatics and found that 42 per cent. gave skin reaction to house dust and that a number of these individuals gave a characteristic history of dust sensitization. He concluded that individuals who gave positive reactions to dust and whose histories were characteristic of dust sensitization should be treated with dust extract. Grove and Coca in 1925 concluded that the active principle in dust was not a protein, an observation that was later upheld by Black. However, Alles and other workers do not agree with Coca's conclusion, and at present the nature of the activating substance in dust is an open question.

We wish to report two cases of hay fever, one of asthma and one of allergic nasal disease in which dust desensitization was successfully employed.

Case 1. F. R., 6 years of age, suffered with coughing and wheezing which occurred especially in the morning for the past eight months. The significant point in her history was that the attacks were aggravated, according to her mother's observation, at any time when dust was in the air. A diagnosis of bronchial asthma was made. She showed no skin reaction to any of the usual proteins, but a strong reaction to dust, which was borne out on passive transfer. She was desensitized to house dust with an excellent clinical result.

Case 2. E. R., 24 years of age, suffered with hay fever commencing the first of May lasting until frost. He had had trouble for fifteen years. The diagnosis being early and autumnal hay fever. He showed strongly positive skin reactions to red top, timothy, June grass, tall ragweed and burweed marsh elder, and was given pre-seasonal treatment for these pollens. Although he was carried to a high concentration in his treatments, he began sneezing the first of May. The skin readings and pollens were checked with no result. He was then tested for house dust and showed a strongly positive reaction. Following a combined intra-seasonal treatment with both pollen and dust he had a comfortable summer.

Case 3. J. B., 24 years of age, complained of sneezing, nasal block, itching of the eyes and occasional attacks of wheezing. His trouble began August 15 and lasted until frost. He had had the attacks over a period of many years. There was a history of hay fever on the maternal side of his family, and he had had eczema when a child. He had never been under treatment. Skin tests revealed strongly positive reactions

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to short ragwood, burweed marsh elder, cocklebur and dust. The condition was diagnosed as autumnal hay fever with pollen asthma. Pre-seasonal desensitization was given with a mixture of the above pollens, the dust being omitted until the middle of August. On August 25 he was having mild attacks of hay fever but with persistent attacks of asthma during the night. He was then desensitized to dust by daily injections, following which the asthma entirely disappeared. The fact that he had no asthma in the winter when exposed to dust is readily explained by the recognized cumulative action of pollen atopen in a sensitized individual. The reaction of the combined effect of the pollens and dust caused him to have asthma.

Case 4. I. M., 54 years of age, for eleven years had had headache over both eyes, nasal discharge and block. During this time she had undergone a left sublabial autrum, a left ethmoid and sphenoid exenteration, and a submucous resection. There had been much local treatment to the nose. The surgical and medical treatment had always been on the basis that her nasal condition was infectious in character; at no time had an allergic study been made. The allergic history was negative except that she had trouble only when she was in Chicago, and was much worse when in her own home, which she had occupied for the past fifteen years. Examination of the nose showed the resultant scarring of the extensive operative treatment. The mucous membrane was pale and waterlogged, and there was thick mucoid secretion on both floors as well as in the antrum and ethmoid area operated on. Smears of this secretion, however, showed a predominance of lymphocytes with relatively few polymorphonuclears. Based on these findings a diagnosis of allergic rhinitis was made, and following the clue that she suffered most when in her own home, a dust extract from her vacuum cleaner was made. A strongly positive skin reaction was obtained with this extract. She reacted to no other allergen, although the usual inhalents were tried. Following a course in desensitization with this dust extract a satisfactory clinical result was obtained.

CONCLUSIONS

1. All allergic individuals should be tested for dust sensitization.
2. Patients with a characteristic history of dust sensitization showing positive skin reactions to dust extract should be desensitized to dust, either alone or in combination with other specific activating atopens.

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104 S. Michigan Ave.

DISCUSSION

Dr. Myron E. Kahn, Chicago: In discussing Dr. Bernheimer's paper on dust sensitization I wish to emphasize one point which was brought out by the essayist. Allergic symptom complex, such as hay fever and asthma, is usually the result of a sensitization to more than one atopen, in other words, the production of the allergic symptoms is often the result of accumulative reactions of varied atopens to which the individual is sensitized. In order to alleviate symptoms it is not necessary to desensitize for all the exciting factors, but only for the principal ones; when dust is combined with other proteins in producing symptoms, the dust sensitization is often one of the most important factors in producing allergic symptoms, and therefore important to eliminate by desensitization.

I wish to cite a case of my own: A young lady, 25 years of age, had hyperesthetic rhinitis. She had been through all the tests with reactions to various atopens, and an attempt had been made to desensitize her. She consulted me and showed the usual nasal findings, such as waterlogged nasal mucosa, pale boggy membranes, watery discharge and sneezing. I tested her with a polyvalent dust extract and she showed a marked reaction. She was desensitized with extract of dust which was gathered from her home. She is now free from all symptoms; this dates back six months.

The technique used in making the test is as follows: 1/10 c.c. of a polyvalent dust extract is injected intracutaneously in the forearm; a reaction takes place in from ten to thirty minutes, manifested by a raised blanched area or wheal, with a circumscribed hyperemic area; the size varies according to the sensitiveness of the patient. The dosage is then graduated according to the individual's tolerance, increasing the dosage up to 2 c.c.

We use the method of Coca for extracting dust.

RELATION OF SURGERY TO PRIMARY AND SECONDARY INFECTIONS*

CARL E. BLACK, M. D.,
C. ELLSWORTH BLACK, M. D.
JACKSONVILLE, ILL.

We will report this morning a case presenting multiple pathological processes, and requiring several operative procedures, together with por-

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tions of the history, the physical and laboratory findings and the treatment.

This man, who has kindly consented to appear here today, is 59 years old. He has lived in Illinois all of his life, farming most of the time. He is the father of five children. At the present time he is a guest of the County of Morgan. He was first seen by one of us in November, 1921.

At that time his complaints were abdominal pain, "indigestion", vomiting after meals, bloody at times, diarrhea, and loss of weight.

At that time his "Present Illness" read as follows: "At the age of 24, 'took sick at the stomach' and 'started running off'; lasted several weeks during the hot weather. Has had it several times since for shorter periods. This diarrhea was the beginning of the 'stomach trouble.' For several weeks before coming to the hospital had pain and bloating in the right side of the abdomen. The 'misery and pain' was mostly in the right side of the abdomen 'just below the ribs,' and came on in 'spells.' It was always in the same place. 'Food hurts me.' 'Food does not digest.' Vomited frequently after eating and at time vomited blood. 'Sometimes pain was lower down on the right side near the hip bone.' Between attacks was usually constipated and took laxatives. Has lost 15 pounds in the last year."

The family history seems to contain no information of importance.

The past history of this man is important. He had measles, mumps, whooping cough and chicken-pox in childhood. He had what he calls "intermittent typhoid fever" at the age of 18. He was sick four months. Had "itching piles" since age 19. Had several mild attacks of sore throat; then at 29 had a severe attack. "Throat swelled up and broke"—"a lot of pus came out." This was on the right side and it left a "hard place on neck below the right ear." Had no trouble on the left side. Had malaria at 30.

At 44 (1916) some teeth became loose—he pulled several himself.

At age 43 (1920) had the remaining teeth extracted on account of pyorrhea.

Had influenza at 46 (1918)—was a severe attack—sick eight weeks. After this attack had to empty bladder four or five times at night for several weeks. Has had no other attacks of frequency. No other urinary disturbance, such as dribbling, difficulty in starting or stopping stream.

At age 21, he weighed 165 pounds; at 28, 180 pounds. There was no loss in weight until the present illness.

He has never used alcohol; he chews tobacco; drinks three cups of coffee a day.

On physical examination the following seemed important:

A tall, lanky, sharp-featured man.

All teeth are missing.

The tonsils are small, embedded.

The heart and lungs were free from abnormal findings.

The skin was dry.

There was no thyroid enlargement.

The abdomen was flat, free from distention or visible peristalsis or masses.

There was no hernia. Palpation disclosed no muscle spasm.

The following areas of tenderness were present:

(a) Tenderness in the epigastrium near its lower border and a little to the right of the median line.

(b) Tenderness in the gall-bladder area.

(c) Tenderness, less marked, just above McBurney's point.

(d) On deep inspiration the tenderness over the gall-bladder area was increased and there was a fullness which was taken to be the gall-bladder.

The liver dullness was not increased. Its margin was not felt.

Spleen, kidneys and bladder seemed normal. There were no hemorrhoids. The prostate was not enlarged. The reflexes were normal.

Urinalysis was negative.

P. S. P. was 57 per cent. in two hours.

Hemoglobin was 70 per cent.

White cells, 7,600.

Reds, 4,000,000.

Wassermann negative.

Blood pressure was 138/98.

Roentgenologist's report ends with the statement that "plates confirm the roentgenographic findings, all of which indicate a duodenal ulcer."

Diagnosis: Ulcer of stomach; appendicitis, chronic; cholecystitis, chronic.

Operation: The abdomen was opened, through a right rectus incision. Many adhesions were encountered, involving the anterior abdominal wall, the pyloric end of the stomach, the gall-bladder and appendiceal regions. The appendix was removed. A gastric ulcer was identified near the pylorus. A gastro-jejunostomy was made and the abdomen closed.

The post-operative course was mild. A parotitis, on the right, was troublesome from the 11th to the 15th day. X-ray on the 33rd day showed the anastomosis working well.

He left the hospital about eight weeks after operation. His condition was good; his appetite and weight were improved. He was not seen for several years.

Re-admission: In August, 1930, he was again admitted to the hospital complaining of abdominal pain, indigestion, "gas on the stomach" and "bowels which will not move." Had lost weight and strength. He has had no other illnesses since leaving the hospital.

Examination: Tenderness marked over G. B. region and gall-bladder can be felt on deep inspiration, moderate general abdominal tenderness. Abdomen is flat but cecum is tympanitic. Muscles are weak and flabby.

Had facies of distress.

Heart, lungs and kidneys show no abnormalities on examination.

Urinalysis and blood examinations negative. Kidney function is more than 50 per cent.

X-ray Examination: Shows anastomosis working well.

Diagnosis: Cholecystitis confirmed by direct examination and by the fact that there is little or no tender-

ness over pylorus and appendix has been removed. No symptoms or signs of pyloric obstruction.

Operation, Aug. 12, 1930: The abdomen was opened with radio-cautery through old line of incision. A loop of ileum was densely adherent to the scar and was accidentally opened but was immediately closed. While this loop was somewhat constricted by the adhesions it seemed sufficiently patent. There were many adhesions extending from appendical region to the gall-bladder and involving the anterior abdominal wall, colon, stomach, duodenum and gall-bladder which had to be separated before the gall-bladder could be reached. There was no mass at pylorus. The neck of the gall-bladder was exposed and cystic duct ligated. The gall-bladder was then separated from the liver and removed with the radio-cautery knife. In fact all incisions including adhesions were made with the radio-cautery knife and hemorrhage checked by fulguration. There was a minimum of bleeding. The anastomosis made in 1921 was functioning and in good condition.

The abdomen was closed with cigarette drain. The pulse during operation varied from 90 to 120. There was marked evidence of shock.

Post Operative:

1. Diagnosis: Cholecystitis, chronic, with many adhesions involving the gall-bladder and stomach and ileum.

2. Convalescence stormy. Intravenous glucose, digalein, morphine were required. Had vomiting and abdominal pain.

3. On the 9th day high fecal fistula developed. All symptoms improved except distress from jejunal discharges. Two methods were used to control the destructive action of the digestive juices on the abdominal wall. The N/10 HCL and thick beef juice, with and without olive oil described by Caryl Potter seemed to be less effective than the Kaolin-glycerine paste suggested by Smith and Christensen in 1925. (Transaction of Western Surgical Ass., 1925.) Suction was not tried.

The fistula became smaller but on Nov. 5th (77 days after operation) was still discharging. The patient's condition seemed to justify an effort to close the fistula. His strength and appetite were fair and he had been sitting up several hours a day.

Anastomosis, Nov. 5, 1930: The whole scar, including area involved in fistula, was excised. The gut (ileum) was isolated and about eight inches of gut was excised, ends closed and a side to side anastomosis was made. On account of loss of tissue due to the several operations and the widespread adhesions a great deal of difficulty was experienced in closing the abdomen.

One small cigarette drain was left in the wound.

There was considerable shock which quickly subsided.

He was up in chair in three weeks.

The wound dry in four weeks.

Discharged January 8, 1931.

This man is very much improved as far as appearance and nutrition is concerned. If you question him

regarding his condition at the present time you will find that all of his past complaints are still present.

We are not especially proud of the abdominal wall. The long period of fistula drainage, the three incisions, each an excision of the previous scar, are not conditions that preserve muscular tone, and prevent excessive scar formation.

Comment

We selected this case for your consideration because of its manifold manifestations of the results of focal infection. It is not easy to say which of the early foci is most important. There was tonsillitis, infection of the teeth, in which comparatively early all were lost and finally typhoid fever of a severe type. The earliest manifestation of infection seems to have been in the teeth.

Ever since Billings coined the term "focal infection" and Rosenow's demonstration of the "selective affinity" of strains of streptococci for the stomach, as well as other organs or parts of the body the profession has been giving close study to the "practical application of the principle that the treatment of gastric ulcer (and other inflammatory processes) should be reinforced by a thorough search for and elimination of, all possible foci of infection elsewhere in the body."—(John T. Finney, Practice of Surgery, Lewis.)

To apply this principle in the case presented we were confronted with numerous areas of primary as well as secondary, infection. To enumerate these makes quite a list. While it is not possible to name these areas in the exact order of their occurrence the following gives a fair idea of the problem:

1. Tonsillitis.
2. Peri-tonsillar abscess.
3. Infected teeth.
4. Typhoid.
5. Malaria.
6. Parotitis.
7. Appendicitis.
8. Cholecystitis.
9. Gastric ulcer.
10. Peritoneal adhesions due to a low grade peritonitis.

The first four are substantially in order but the correct order of the last four is somewhat in doubt. Either of these might have explained his early symptoms of indigestion, although it seems evident that in the later stages of his sickness,

but still prior to his first (1921) operation, the gastric pain, fear of food, vomiting of food and of blood and his loss of weight were due to his ulcer of the stomach. Physical examination at this time showed tenderness on palpation in both the appendiceal and the gall-bladder as well as over the pyloric areas, and a diagnosis of chronic appendicitis and cholecystitis in addition to gastric ulcer seems to have been justified, although "gastric ulcer" was used as both the working diagnosis and the final diagnosis. Appendicitis and peritoneal adhesions were given as a part of the final diagnosis following the first operation.

There are various theories as to the underlying cause of ulcer. Finney gives these as 1. Inflammatory, 2. Neurogenic, 3. Circulatory, 4. Bacterial. In this case No. 4 would seem to be plainly applicable, although his long worry over his marital and family relations would place No. 2 as a secondary cause.

Such a case presents a complicated diagnostic picture. While one wishes to avoid as far as possible "exploratory" operations, yet in the very nature of things the first operation was of necessity somewhat of an "exploratory" nature. At least, it was only after opening the abdomen that we finally decided which area should first be treated surgically.

All the symptoms and signs, except the x-ray findings, might have been present without the presence of ulcer. In this respect the x-ray was valuable although the radiologist thought the ulcer was probably on the duodenal side of the pylorus. In fact the ulcer involved the pylorus and may have extended sufficiently to the duodenal side to have justified the radiologists' opinion but the main portion of the ulcer was inside the stomach. It appeared to us that the ulcer was gastric in origin. The constriction of the lumen of the pyloric outlet was plain. This ulcer occupied the usual position—that is on the lesser curvature, toward the posterior side. This according to Balfour is the location of 90% of gastric ulcers.

The confusing thing found at the first operation was the widespread development of adhesions, involving stomach, gall-bladder, appendix and intervening structures and organs. This disposition of the peritoneum to form adhesions has complicated the whole case and is, no doubt, the thing which has prevented complete recovery.

Notwithstanding the intraabdominal adhesions the patient made a fair recovery and returned to work in about two months.

He got along moderately well for more than eight years. It is true that he continued to have most of his digestive symptoms but in modified form until July, 1929. He came in at this time complaining of persistent indigestion, being constantly distressed by the presence of "gas," sour eructations with pain after eating. At this time he located the pain in the right upper quadrant. There was tenderness and a suggestion of "a mass" in this area, and he was having increasing trouble from constipation and had lost in weight and strength during the preceding four months. A barium meal and an x-ray examination showed the gastro-intestinal opening was functioning. His vomiting was not as distinctly obstructive as prior to the gastro-jejunostomy. A diagnosis of cholecystitis was made without resort to a cholecystogram, as the clinical evidence seemed quite sufficient to warrant the diagnosis.

On August 12, 1930, the abdomen was again opened and the gall-bladder removed. No stones were found either in the gall-bladder or in the duct. The ulcer of the stomach was healed as far as we could judge without again opening the stomach. The pyloric orifice was evidently patent.

This operation was made with the radio-cautery knife, which may have been, in a degree, responsible for accidentally cutting a loop of gut. The cut in the gut was hardly one-third inch long. The opening was immediately closed. The gut was densely adherent to the anterior abdominal wall and adhesions were more extended than at the first operation. Considerable difficulty was experienced in isolating and removing the gall-bladder. The neck was first isolated, and the fundus removed by working up to its base. The gall-bladder was large and distended and the whole region was enveloped in adhesions. A small drain was placed in the region where the gut was injured.

The operation was followed by profound shock and a great deal of abdominal pain. On the eighth day a fecal fistula developed following which the patient was much more comfortable. This fistula gave a great deal of trouble. There was extensive erosion of the abdominal wall. It was three months before we secured conditions

which would justify an attempt at closure of the fistula.

The abdomen was again opened on Nov. 5, 1930. Considerable difficulty was experienced in isolating the involved loop of small intestine on account of adhesions which were still more abundant and dense.

About eight inches of small intestine was excised and a side-to-side anastomosis was made. Due to the several operations and to the extensive erosion of tissue and the destruction of a wide area of peritoneum by the adhesions we experienced considerable difficulty in making a satisfactory closure of the abdominal wound. To our gratification the wound healed kindly and we had no return of our fecal fistula. He left the hospital in two months.

An interesting feature of this case was the fact that at no time was there any evidence of an active peritonitis.

Another interesting feature is the persistence of most of the symptoms for which he was originally operated on. That is, he still has abdominal pain, indigestion, fear of food, eructations and accumulation of "gas." These may finally disappear. However it is a little discouraging to do so much work and to subject a patient to so many risks and so much suffering, for such slight results as we seem to have obtained up to the present time.

The questions which we suggest for your frank consideration are as follows:

1. Should he have been treated surgically?
2. Would medical treatment have given as good or better final results?
3. Would some other method of surgical approach have promised better results?
4. What errors of surgical judgment does the history of this case reveal?

Our reasons for the original operation (gastroenterostomy) were three:

1. The long persistence of the symptoms which were undermining his strength and preventing his usefulness.
2. The presence of blood in the vomitus.
3. Increasing evidence of pyloric obstruction.

His loss of weight and strength no doubt depended in a large degree on the increasing pyloric obstruction. The appendix was demonstrated, by direct examination, to be involved in disease and it was removed prior to making the gastroenterostomy. This may be regarded as a pre-

ventive measure rather than a symptom relieving operation. However a careful analysis of the symptoms and signs would suggest that the appendix had been and probably was still a factor in the symptoms.

At the first operation, while the gall-bladder was found distended and involved in adhesions it was not considered wise to subject the patient to the additional strain and shock involved in the removal of the gall-bladder. In fact there seemed to be good reasons to hope that the symptoms would subside after dealing with the ulcer of the stomach and the appendix. An acute attack of appendicitis under the conditions found would have been a serious matter. Our judgment seems to have been justified by the fact that the man returned to work and continued self-supporting for eight years. It is true that he continued to have more or less digestive distress but this did not prevent him from having strength to pursue his occupation on the farm.

When he returned to our care in July, 1929, his strength was again reduced and his digestive disturbances and abdominal pain from "gas" seemed to demand further measures. At this time the gall-bladder was distended and tender and the whole picture seemed to call for the removal of the gall-bladder. This was done in August, 1930.

Due to the extensive adhesions and especially to the adhesion of the gut to the anterior abdominal wall we were unfortunate in injuring the gut. This subjected the patient to a long period of distress due to the fistula and made a final operation for resection and anastomosis necessary.

This case seems to be one in which a series of secondary infections have supervened on the original focal infections in the tonsils, teeth and intestine (Typhoid fever). Your discussion of the relation of these foci to each other and to the secondary conditions for which the several operations were made is earnestly solicited. They well illustrate the desirability of a careful study of the past history in any intraabdominal infection.

We are also interested in your opinions regarding the operative procedures. We realize that there are a number of points on which just criticism can be made. As we have gone back over the case we can see a number of things which might have been done differently.

Finally we do not overlook the fact that we

are presenting a case which has had four serious operations for digestive symptoms which still persist. This fact raises a fair inquiry as to whether surgery was justified or whether better or equally good results might have been obtained from general and medical measures.

How much prospect is there that the patient will still further improve and finally be returned to a reasonable state of usefulness?

DISCUSSION

Dr. M. J. Seifert, Chicago: What type of gastro-enterostomy did you do? The usual low one? As a result of my studies along that line, I believe it is a great mistake to make an anastomosis in the lowermost border of the stomach because one of the fundamental laws of surgery is the non-creation of artificial conditions; when artificial conditions must be created, the mended organs should conform as closely as possible to the normal anatomic and physiologic state, after the operation has been consummated. Your anastomosis, by the laws of gravity and by the intention of the surgeon, will favor an immediate expulsion of foods ingested into the stomach into the enteric canal. This premature expulsion of the gastric contents throws food into the jejunum in a condition inimical to its well-being. Further, food forced through a mere slit often acts as a decided irritant to the lips of the stoma, thus causing subsequent pathology, in the form of complete closure of the gastro-jejunosomy or ulcerations or other pathology in the small bowel.

In the high gastro-enterostomy, such as I have done for many years, an elliptical excision is made in the upper lip of the gastric as nearly on a level, and as close to, the pylorus as the gastric pathology will permit. This operation practically retains normal anatomic relationships. The gastric receptacle thus created continues the mixing, churning and digesting of food—hence, the pabulum when received by the small intestine is physiologically better prepared for further digestive processes. No food passes through the pylorus, as the carefully calculated jejunal tension in this high anastomosis produces a crater-like gastric antrum which, naturally, receives the food before it passes through the new opening. You know how the stomach works, the pylorus is higher than the body of the stomach and, to imitate nature as closely as possible, the food is propelled towards the pylorus in my operation. The food will not jump over the crater-like antrum trying to force itself through the diseased pylorus, but will follow the course of least resistance which is, in this case, through the new stoma, via the crater-like antrum described.

I am sure you will be pleased if you give my method a fair trial. You can see the moving pictures illustrating my technique in the adjoining exhibit-room.

Regarding your statement of focal infections, I would like to make a correction: Dr. Quine, one of the teachers of Billings, was vigorously emphasizing focal

infections in his lectures long before Billings ever used that term, but that is neither here nor there.

Dr. Black, I enjoyed your candor in exhibiting a failure very much. It requires some courage, but shows the true scientist trying to learn and trying to teach others important problems in surgery. I consider it a privilege to have the honor of adding my humble discussion to your paper.

I thank you.

Dr. J. H. Bacon, Peoria: It would be interesting to know why certain individuals develop abdominal adhesions and others do not. Why do such massive adhesions develop in some individuals after operations in which the majority would escape with possibly only a few small strands that eventually would stretch and break, while in these few, the adhesions may develop and contract so firmly as to produce obstructions, even years later? Is there any relation between this class and those who develop keloids in scars of the skin? Do these patients lack something in their makeup, just as the diabetic lacks insulin? Is it a lack of some vital element of control that prevents the tissues from doing its work and stopping there when the natural processes of repair have been completed? It is a fruitful field for study. May not this productive growth have some chance relation to that of malignancy?

CHRONIC ULCERATIVE COLITIS*

(Further Studies)

(1836 Proctoscopic Examinations—102 Selected Cases)

M. H. STREICHER, M. D.

Assistant Professor of Medicine, College of Medicine, University of Illinois, Attending Staff, Grant Hospital

CHICAGO

We began this work in 1926. In 1929 we completed our first report of 65 cases. Our results in the past five years have been very encouraging. In the first 65 cases 80 per cent. improvement was noted in cases treated with autogenous vaccine and appropriate diet.

At the present time we are reporting 37 additional cases. Our percentage of improvement has been lowered to 70.6 per cent. Our method of approach, as may be familiar to many, is that of obtaining bacteriologic cultures from the colon through the proctoscope and preparing an autogenous polyvalent vaccine of all bacteria found. The vaccine is given hypodermically to the patient at regular intervals—the dosage varying from 1/200 c.c. to 1.5 c.c., depending on the severity, the extent of the process and the clinical

*From the Research and Educational Hospital, Department of Medicine, University of Illinois College of Medicine, and the Grant Hospital. Presented before the Society of Internal Medicine, January 26, 1931.

progress of the disease. Permit me to mention at this time the necessity of variation in dosage of autogenous vaccine. The amount to be given at the first injection is difficult to determine, while subsequent injections are based on individual susceptibility of the patient as evidenced by the amount and degree of reaction to the injection given. It is relatively simple to cause the patient to go into a protein shock by the slightest overdosage. I have had several very interesting experiences with cases that have developed a form of generalized facial edema following an injection of as little as 1/100 c.c. of autogenous vaccine. The organisms most frequently found are the diplostreptococcus of certain strains, the *B. Coli* and *B. lacti aerogenes* either as an individual organism or in association with many other organisms.

As to the frequency of occurrence of ulcerative colitis we find that one case of ulcerative colitis is observed in every thirteen cases of diarrheas. In the accompanying Table A a series of 1,836 proctoscopic examinations are listed, in which 102 cases of ulcerative colitis were selected.

In Table B. you will find that 5 cases died and 5 cases became worse on injections. There is no necessity of apology for the cases that died because they were merely an example of far advanced cases; they were badly neglected over a long period so that practically nothing could be done regardless of the method of approach. The cases that became worse on injections are of special interest to us because they represent cases that are definitely resistant to vaccine therapy, and the apparent cause for such resistance I believe lies within reason of explanation. It has been our experience that whenever we encounter a case of ulcerative colitis in which a hemolytic streptococcus has been found in culture direct or subculture that we have very poor results to expect. In our first series we had about three cases in which the autogenous vaccine therapy proved a total failure—at that time we hesitated interpreting our failure on the basis of the presence of the hemolytic streptococcus in the culture, but are fairly convinced of it with the experience of the additional two cases with identical cultural findings.

As to the advisability of surgery in cases of ulcerative colitis—it is my sincere belief that putting it mildly “it is cruelty to dumb animals” to permit any surgery on early cases of ulcera-

tive colitis; and as far as we have been able to observe or learn from others who have operated on like cases very little has been accomplished. I know of very few cases in which a colostomy or ileostomy has been performed in which a successful reanastomoses has been possible. At a time when the patient with an ileostomy or colostomy was ready for another operation, the adhesions and the local peritonitis was so extensive that the surgeon in question invariably advises that the patient be left alone and permits the ileostomy or colostomy to remain as a permanent rectum with the fecal discharge constantly pouring into a colostomy bag. This situation is not serious when the patient in question is past 30 or 65 years of age, but is certainly distressing to my way of thinking when the patient is in the early 20's or 30's.

It is my sincere desire to impress the reader definitely that I strongly believe that careful medical management, consisting of a diet of low residue, high vitamin and high calory, plus vaccine therapy and removal of distant foci of infection, is the treatment of choice in our opinion, at the present time of all cases of bacterial chronic ulcerative colitis regardless of the stage in which encountered. I wish to add that in no instance have we used any local applications or irrigations of the colon by any standard astringents or antiseptic solutions.

At the present time we are working on a new phase of therapy, and I do hope that if it proves satisfactory that considerable time will be saved by the laboratory technician in the preparation of the vaccine and may eliminate entirely the necessity of culturing every case that is proctoscoped—this becomes essential when a large number of cases are to be differentiated.

There is one point of interest to all of us which I feel should be mentioned at this time

TABLE A

SUMMARY OF 1836 PROCTOSCOPIC EXAMINATIONS OF DIARRHEAS SHOWING FREQUENCY OF OCCURRENCE OF ULCERATIVE COLITIS IN DIARRHEAS

Name of Hospital	No. of Cases of Diarrhea	No. of Cases of Ulcerative Colitis	Ratio
Research and Educational			
Hosp. Univ. of Illinois..	1530	74	1/21
Grant Hospital.....	105	8	1/13
Office	181	16	1/12
Other Hospitals.....	20	4	1/5
Average	1836	102	1/13

TABLE B
SUMMARY OF 102 CASES OF CHRONIC ULCERATIVE COLITIS
Before Vaccine Therapy

No. Cases	%	Av. No. of Stools daily	Av. Wt. Loss	Duration	Proctoscopic Observations	Variation in Age
72	70.6	12	20 lbs.	2 yrs.	Stage of Ulceration. Strep. Hem. absent.	18/59 yrs.
16	16	20	25 lbs.	3 yrs.	Stage of Ulceration. Strep. Hem. present.	26/75 yrs.
14	13.4	30	45 lbs.	8 yrs.	Stage of Ulceration.	26/61 yrs.

After Vaccine Therapy							
No. Cases	%	Av. No. of Stools daily	Av. Wt. Gain	No. Vaccine Injections	Proctoscopic Observation	Follow Up	Progress and Comment
72	70.6	3	15 lbs.	30	Stage of Inflammation.	4 yrs.	No Symptoms.
16	16	10	5 lbs.	50	Stage of Edema.	2 yrs.	Symptoms present in Mild Form.
14	13.4	15	Cont. to lose	80	Stage of Bleeding.	3 yrs.	5 died. 4 refused injections. 5 worse on injections.

inasmuch as I recently encountered another case in which perforation of the large colon has been produced. These perforations in most cases occur in those of active ulcerative conditions and almost invariably are produced by over inflation of the pneumatic bulb; it is for this reason that I very seldom use air-insufflation in ulcerative colitis or any ulcerative condition.

CONCLUSION

1. In general I believe that conservative medical management is the treatment of choice in chronic ulcerative colitis at the present time.

2. Chronic ulcerative colitis should be considered an infectious process.

3. Favorable results are noted with polyvalent autogenous vaccine therapy.

4. The diet we suggest is that of low residue, high vitamin and high calory.

307 N. Michigan Blvd.

I wish to express many thanks to Miss Johnson, Miss Kaplan, Miss Tankel and Miss Hood for their assistance in this work.

OBSERVATIONS DERIVED FROM TWENTY-ONE CONSECUTIVE CASES OF FRACTURE INVOLVING THE HIP*

FRANK G. MURPHY, M. D.

CHICAGO

The literature on fractures involving the proximal end of the femoral shaft and the hip is voluminous. Before 1900, the subject was studied and written on by many master surgeons of America and Europe, including Nicholas Senn, J. B. Murphy, Hugh Owen Thomas, Theo-

dore Kocher, R. W. Smith, and others equally famed. Fibrous union was the rule rather than the exception in most instances, until Royal Whitman of New York, in 1902, introduced his method of treatment. Since that time several series of cases have been reported with percentages of firm bony union varying from 60 to 90. The statements made in this paper are neither new nor radically different from previous writings of other surgeons, but they include the observations of the treatment of cases as it was carried out at the time rather than the course I would have pursued in the early cases had I had my present experience.

The etiological factors in addition to the predisposing causes usually mentioned of old age, osteoporosis, senile atrophy, diminished blood supply, an angle of 125 degrees with the shaft, and arterio-sclerosis, are few in number. The most important causal factor is *direct force*. The patient usually slips and falls from a standing position, striking the posterior aspect of the great trochanter. This force is exerted in a forward direction so that the strain comes directly on the weak fragile portion of the cervical neck. The proximal portion or head is held securely in the acetabulum; the distal or shaft end receives the impact; the point of greatest strain occurs anywhere between the head and the trochanter and the fracture occurs at that point, viz., the point of least mechanical advantage, by a rotary thrust forward of the great trochanter and upper portion of the shaft on the acetabular portion. Fractures extending through the trochanters and into the upper portion of the shaft are caused by the direct force being applied on the lateral aspect of the trochanter rather than on its posterior surface. Torsion in some cases apparently is the cause of fractures involving

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the upper portion of the shaft as well as the neck.

Immediately the fracture occurs the strong gluteal abductors contract and draw the distal fragment upward and rotate it outward. The ilio-psoas, by its attachment to the lesser trochanter, draws the distal fragment upward and outward, causing the typical eversion and shortening deformity. In a linear fracture without displacement no immediate deformity may occur.

In the present series, even by careful history taking, the patients in no case gave statements that would lead us to believe in the strong muscular contraction theory of fracture before the patient fell. Muscular action, undoubtedly, is the cause of some fractures, probably those involving one of the trochanters. Dr. S. B. MacLeod recently showed a fracture of the lesser trochanter at its junction with the femoral shaft, with inward displacement. It is impossible to conceive the cause of this as being anything except strong muscular tension.

Impaction occurred in three cases. This was not definitely proved, but presumed to be present because of the length of time the patient walked between the time of injury and the time of disability in one case and the absence of deformity in two others. X-ray diagnoses of impaction were occasionally made but when these patients were anesthetized there was no difficulty in reducing the deformity and overcoming the shortening, if deformity and shortening occurred. The diagnosis of impaction is in most cases, I believe, an erroneous view of the super-imposed fragments. Two views or stereoscopic views will obviate this appearance. On a fresh cadaver tremendous force is necessary to cause impaction of fragments even though the bone is of a soft spongy type. Impaction cases occasionally have few or no symptoms and the X-ray shows only an indefinite line of fracture, usually intertrochanteric or at the base of neck. This type of fracture accounts for the history we occasionally elicit, of a fall followed by no marked disability. One case of this series shows a fracture of this type in which there was no immediate deformity or shortening but later, due to absorption of the neck, there was considerable deformity, shortening, good union, and good function.

An arbitrary division of the anatomical types of fracture is made, but this is not according to hard and fast rules. Frequently a fracture can-

not be placed in any one class but is a combination of two or more types.

1. Subcapital, which is entirely intracapsular at the junction of the neck and the head. Wilson and Cochrane, after many dissections, state that very few of this type occur, but that there is usually a bridging across of periosteum or part of the capsule posteriorly.

2. Transcervical, through the narrow part of the neck. This type is usually partly intracapsular and partly extracapsular.

3. Fracture at the base of the neck which is usually extracapsular.

4. Inter-trochanteric fracture.

5. Transverse fracture below the greater trochanter and above the lesser trochanter, the so-called pertrochanteric fracture.

6. Fractures of the hip involving the upper end of the shaft as well as the trochanters. In these there is usually more or less comminution.

The healing process in hip fractures is still a debatable subject. In true intracapsular fractures the blood supply to the head through the ligamentum teres is negligible, according to Wilson and Cochrane. D. B. Phemister states that aseptic necrosis of the proximal fragment in complete intracapsular fracture of the neck of the femur occurs in a not inconsiderable percentage of cases and that the healing process extends inward from the distal fragment. J. V. Santos states that the vessels of the ligamentum teres may supply adequate blood to keep the head alive even in the aged. J. J. Moorhead believes that non-union is caused by lack of coaptation due to interposition of soft or hard parts. However, the healing process is a slow one and its completion is a matter of many months. Usually the closer the fracture occurs to the trochanters or the more the trochanters are involved, the more sure is the possibility of union. By absolute immobilization in a position of good reduction union may be strong enough to permit voluntary motion in bed without weight bearing at the end of six to nine weeks, but the delicate soft callus must be amply protected against the danger of torsion and bending by adequate splinting from the pelvis to the heel, to bear the weight for four to eight months after immobilization has been removed. X-rays during the treatment are only of value to determine the position of the fragments and the completeness of the reduction. Demonstrable callus formation usually

cannot be shown except in fractures involving the upper end of the shaft. In one of these cases the deeper shadows cast by the proximal fragment seems to lend weight to Phemister's view, that the calcium salts are not being absorbed and that the fragment is, more or less, playing the role of a sequestrum.

Later x-rays, one to two years after the healing process is thought to be completed, frequently show such conditions as coxa vara, shortening of the neck, non-union, and absorption of the neck with attachment of the head on the shaft. These abnormalities with the exception of non-union usually do not prevent very good function. The complete absorption of the soft, spongy bone is a condition which simulates very closely the absorption which takes place in the soft, spongy bone of an injured vertebra following a quiescent period after a back injury, and is known as Kummel's kyphosis.

X-rays taken from one to three years after a fracture has occurred, and after the patient has acquired very good clinical function, often prove to be very surprising and disappointing. The initial reduction and the early x-rays may show very good position and give promise of a good union. The neck goes on to absorption in a large proportion of cases of fractures that occur anywhere inside the inter-trochanteric line. J. Albert Key, of St. Louis, reports a case of impacted fracture, with cast treatment and non-union. Dr. F. H. Albee believes that this area is without blood supply and the procedure in non-union cases is to bring blood to it, through an autogenous bone graft peg. Would this be a logical procedure in fresh fractures of the neck? According to Leriche and Policard, the graft has to regenerate by a process of creeping substitution from the surrounding bone, after the initial death of the graft.

Kellogg Speed states that absorption of the bone may occur even in impacted cases. Franzenheim found that the periosteal covering of the neck was very inactive osteogenetically.

TREATMENT

Why have the different forms of treatment so many advocates? The treatment in this country as well as in European clinics does not seem to be as yet sufficiently standardized. The 1929 report of a commission appointed by the American Orthopedic Association to study the end

results of intracapsular fractures of the neck of the femur shows that the usual form of treatment is that devised by Royal Whitman, closed reduction by extension, internal rotation, and complete abduction. The 1930 report of this commission shows that the great majority are being treated by the Whitman method, several by the Ruth method of closed treatment, a few by the Orr-Thompson method, and an increasing proportion by open surgical operation. The Albee method was used in 38 cases; in this an autogenous bone peg was inserted from the trochanter through the neck. The Smith-Peterson method, in which a special flange nail is driven through the trochanter, neck, and into the head, was used in 31 cases. In the series reported in this paper the Whitman method with closed reduction was employed in 15 cases, reduction and extension by the use of sliding traction in three cases, and open operation for old un-united fracture in two cases. One case refused treatment. One case of slipped epiphysis was reduced by open operation. The best results were obtained by use of the Whitman abduction spica cast. There were 13 cases of bony union, one patient died from fat embolism the third day after injury, and the last case is still in the abduction cast. Of the three cases treated by extension, one developed a hemiplegia from a cerebral hemorrhage and died before we could determine by x-ray what type of union had taken place; the second case got good firm bony union with coxa vara, shortening of $1\frac{1}{2}$ inches, but with fairly good function; the third case resulted in non-union and considerable disability. The three cases operated on have fairly good results with stable hips; in one a bone peg was used between the trochanter and the head and in the other the Whitman reconstruction operation was used; the third case of slipped epiphysis has a good result.

The Whitman method of reduction of a fresh fracture is a splendid means of obtaining and maintaining reduction of the fragments. The immobilization is secured and the change in position so necessary in these elderly patients is so easily accomplished that I think it is far better than any other form of immobilization. Special precautions to be advocated to those not thoroughly familiar with its application are first, thorough and complete reduction of the fragments, wide and complete abduction of the lower

fragment which impinges the fractured surfaces on each other and holds the distal fragment in proper alignment with the proximal one, and internal rotation of the limb which stretches the capsule and holds the fragments in position. Perfect anatomical reduction is more easily accomplished in fractures involving the base of the neck, the greater trochanter, and the upper end of the shaft, than in the subcapital fractures. These even after most careful manipulation by the closed method sometimes show some displacement and rotation of the head. A most necessary precaution is the thorough and proper molding of the cast about the bony prominences as it is setting. This should be done by trained assistants.

I wish to express my appreciation to Dr. Henry B. Thomas, Chief of the Orthopedic Service, University of Illinois College of Medicine, for his cooperation and for the privilege of including in this paper three cases from the Department.

CONCLUSIONS

Observations made during the course of treatment and in consultation with patients several years after treatment was completed are:

In transcervical fractures, even though the initial reduction was anatomically very good and union occurred, absorption of a considerable portion of the neck later took place.

Good union usually occurs even with only fair approximation of the fragments, but notwithstanding the poor anatomical reduction, considerable coxa vara, shortening, limited abduction, and absorption of the neck, function is usually very good.

No proven case of fracture by muscular contraction was seen. The usual cause was a fall on the posterior aspect of the great trochanter.

A very disagreeable complication is the presence of a generalized hypertrophic arthritis which especially involves the knee. In these cases immobilization in the cast resulted in marked stiffening of the knee that resisted physiotherapeutic measures for a considerable period.

Timidity and half measures in reducing the shortening, the fracture, the eversion, and the abduction by properly extending, inwardly rotating, and above all, widely abducting the lower

fragment will at best result in only mediocre accomplishment.

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DISCUSSION

Dr. Frank C. Murrah, Herrin: I want to emphasize the fact that fractures of the neck of the femur in old people should be handled with a great deal of care. These people die very easily, and personally I would steer clear of any sort of apparatus that would prevent the patient sitting up in bed. I usually put these cases up with just a weight and pulley extension, with sandbags and other things to keep the leg from moving from side to side. Of course, the administration of any sort of anesthetic in an old person about 70 years of age is a serious matter, and I would not think of that. To my mind it is much more important to save the patient's life than to get a good result in the hip. Of course, if you can do both, all right. All these manipulations and peggings, etc., for the purpose of getting a good reduction in these fractures are worth while in younger people, of course.

It simply gets back to the question of the simplest way of getting the fractured ends together and holding them there, and the simplest way is the best for the patient. Sometimes it is a simple matter, and sometimes it takes a very extensive operation. Just why these bones near capsules should not heal as easily as other bones I do not think has been explained. Klinefelter of St. Louis insists that fractures in bones "bathed" by joint fluid throw out very little callus and heal slowly, and further states that such fractures should be held in a cast for a much longer period of time than any other fractures. He states that stiffness in the joint is not due to long immobilization as much as

it is due to lack of immobilization, and also states that taking off immobilization too soon and allowing motion throws out excessive callus sometimes, and you will get stiffness in that way. That applies more to the knee than to the hip.

Dr. Frank G. Murphy, Chicago (closing): All these patients should of course be treated very carefully. If in bad condition it is important that treatment should be palliative for a while. However, as soon as possible I think application of a cast in a Whitman position avoids any further shock which they might get from moving and manipulation. Every time there is manipulation there is irritation and some shock. If you can immobilize the fracture and keep it out to the side, the patient can be turned over in bed and put in a sitting position with no further shock from trauma due to manipulation from the fragments on each other.

MODERN PSYCHIATRY AND CRIMINOLOGY*

MEYER SOLOMON, M. D.

Formerly Director Municipal Psychopathic Laboratory, Associate
in Neurology, Northwestern University Medical School

CHICAGO

Psychiatry of the present day is concerned not merely with institutional types of mental disorder but also with all behavior problems. It has left the stage in which its work was confined to patients sent to hospitals for the insane which were isolated from the community. It has gone into the community to study the patient in his home, in the school, in the workshop, in the neighborhood and in social relations. It has become intensively absorbed in the physical, intellectual and emotional makeup of the patient, his handicaps, the influences to which he has been subjected from infancy up to the time of the onset of his mental disorder, and his reactions to these influences. The psychiatrist's interest is not confined to the insane and the feeble-minded, but includes the whole range of behavior problems—from the hobo, pauper, dependent, alcoholic and drug addict on the one hand, to the psychoneuroses, maladjusted and eccentric personalities, the behavior problems of children (in infancy, the preschool, grammar school, high school and college stages), parent-child and teacher-child relationships and adult education on the other hand. It has come to see the significance of personal, emotional struggles, of physical health and personal hygiene, of socio-

economic-industrial conditions, of proper occupational placement and the like.

Psychiatry is also being used to help in the solution of some of the problems of criminology.

MODERN CRIMINOLOGY

Many different groups are interested in the prevention, detection, judicial disposition and penal treatment of crime, and more and more appreciate that a scientific study of crime and penal methods consists not merely in destructive criticism of older methods, but also in research and investigation, as well as constructive plans for reform. As we have recently been reminded, many of our so-called new views are not so new after all. The basic general principles were enunciated in 1870 in the Declaration of Principles of the present American Prison Association. The dynamic, genetic viewpoint is being developed in criminology, as in other fields of malbehavior.

What drives one individual into a psychosis may drive another to alcohol or drug addiction, another to a psychoneurosis and a fourth to delinquency or criminality. It is therefore plain that efforts must be made to understand the individual delinquent, to study the driving forces both within and without him which brought about his anti-social behavior and to map out as early as possible a proper plan for correction or treatment, in so far as is feasible. This means nothing less than more and more intensive individualization in the handling of each offender and this involves more detailed study, investigation and collection of data concerning each offender.

PSYCHIATRIC APPROACH TO THE PROBLEMS OF CRIMINOLOGY

As Dean Wigmore has stated, the objects of criminal law are:

1. Deterrence or repression of the multitude by the threat of penalties for prohibited acts;
2. Disablement of the individual offender from repetition of his offenses, by a warning, or a fine or confinement;
3. Reformation or cure of the individual offender by indeterminate sentence, parole and probation;
4. Revenge or retribution on the individual offender. The so-called vengeance motive is now practically discarded in modern law, and is not

*Read before the Section on Public Health and Hygiene of the Illinois State Medical Society, May 6, 1931, East St. Louis.

now professed or accepted by the law itself and although once important in primitive law, is now merely a by-product and permits the family and the community to feel a sense of retribution. As we know, children, being immature and too young to understand the threat of the law (the repression purpose), have gradually come to be treated differently through the establishment of juvenile courts, etc. The same applies to those who are mentally incapable of understanding the law's prohibitions and to those who understand them but are incapable of controlling their inhibitions (so-called irresistible impulses). Primarily, the law proceeds from the basic idea of the repression of the multitude, while disablement and reformation of the individual offender are secondary.

More and more it is coming to be realized that in the handling of offenders in the post-juvenile period we need methods similar to those developed in the juvenile courts. It is urged that "anti-social conduct should be considered as dispassionately as a broken leg." Individualization is a *sine qua non*, and, as White has so well stated it, ". . . the criminal, and not the crime, should be the matter of prime consideration, and . . . the sentence or better, the decision of the court, should be calculated to cure the social illness as it has been shown to exist in the conduct of the defendant. All cases of pneumonia are not treated alike just because the disease happens to be pneumonia. The patient is treated and allowances have to be made for age, previous condition of health, of resistance, etc. The patient is treated and not the disease; and it is as illogical to sentence the person who has committed a certain offense to a specific term of imprisonment as it would be to decide, when a patient is admitted to the hospital, the day upon which he shall be discharged." In other words, although according to law it is the act which is a crime and so makes the doer of the act a criminal, psychologically the act is only a symptom which needs interpretation as to cause or causes, prognosis and treatment.

Now, granting that a large proportion of criminal cases are labeled by the psychiatrists abnormal or disordered behavior, it must not, therefore, be concluded that the psychiatrist wishes to label all of these persons legally insane, nor does he desire to mollycoddle them nor minimize their

punishment. After all, insanity is now regarded by the rank and file of psychiatrists as a legal or social rather than a medical term and refers to committable mental disorder—mental disorder of a degree requiring commitment to a special hospital for the insane. From the legal standpoint, if a criminal act is the result of wilful, purposely chosen misbehavior, in other words, intent, the individual is sane; while if such act is the result of disease and not consciously and purposely chosen, he is insane. Whereas, from a legal standpoint, the fundamental questions which concern the court are whether the person, at the time of the offense, had sufficient mind to know that the act was wrong and to be able to choose the right and refrain from the wrong, from the medical point of view the main questions to be determined are: Why did he commit the act and how can we remedy it? As Singer has said, "From a practical point of view, does it make any real difference whether we label a man responsible or irresponsible? Would it not be equally pragmatic to hold everyone responsible for his acts, whether sane or insane, and then adopt measures that will 1. insure society against further criminal acts on the part of this person; 2, establish clearly that society cannot, for its own protection, tolerate such acts regardless of the reasons back of them, and 3. rehabilitate the offender if that is possible? These purposes are all that are hoped for from punishment; the introduction of the mythical concept of responsibility merely clouds the issue. Thus, from the psychiatrist's point of view the question is not one of abolishing responsibility, but of ignoring it, and of planning treatment to fit the offender rather than the offense."

There is thus no fundamental conflict between law and psychiatry as to motives and objectives. But how is this to be done unless by personal study of the offender or delinquent or so-called criminal, the probable causes of the misbehavior and an estimate as to the probable outcome and recommendations as to treatment rather than punishment which are indicated to fill the purposes mentioned above. Overholser is well justified in saying, "The history of the treatment of offenders would seem to indicate that punishment in its narrow sense has failed as a method of preventing offenses, and that we must look further if we are to accomplish more than a

temporary detention of offenders and a satisfaction of the primitive lust for vengeance."

One can, as he states, well compare the evolution in the attitude toward the cause and treatment of mental disorders from Pinel and Tuke in 1792 to the present time to what will take place toward offenders against the criminal law in the not very distant future. The history of the evolution in criminal law already shows that at first punishments were very harsh as evidenced by the fact that in 1750 Blackstone mentioned 160 capital crimes on the statute books of England, whereas, as White has put it, "the number of crimes on the statute books that are technically punishable by death are growing less and less, until today the crime of homicide is practically the only one left; and because of the waning tendency of jurors to find the culprit guilty and of judges to sentence him to death this crime is less and less frequently so punished." In 1764, Beccaria founded a school of criminology by which the offense and not the offender was regarded as most important, and by which the judge determined the guilt or innocence but the penalty was fixed by the government according to the gravity of the offense as representing degrees of responsibility. Then, Lombroso, in 1876, in his "Criminal Man," as founder of the so-called "positivist school," insisted that it was the individual rather than the act alone that should be studied and believed crime to be due to mental abnormality of the offender by reason of mental diseases, especially epilepsy, atavism and degeneration, while his colleague, Ferri, emphasized the importance of the reaction of the individual to social and other environmental forces. Minors and the insane were gradually treated differently from others and there have come to pass such individualization in the treatment of offenders as is found in our modern system of probation and parole, indeterminate sentences, reformatories and separate institutions for juvenile offenders, defective delinquents, and the criminal insane. In place of concentrating merely on such questions as responsibility with and punishment indicating a desire for vengeance, we need intensified individual study of each offender. This means that as time goes on our prisons will gradually be transformed into scientific laboratories for study and reorganization of human behavior.

Psychiatric methods of diagnosis and classifi-

cation have shown the need of careful study of the criminal in addition to the crime. This permits of individual case or personality studies from all points of view, especially psychosocial. The employment of this method will lead to the raising of peno-correctional work to the dignity of a profession.

Social Service and the Professional Attitude in Criminology. It has justly been urged by many, as for instance recently by Stearns, that the whole problem of crime be recognized as a social problem and that our first big job is to introduce social case history and case work into criminology. In the field of juvenile delinquency the ground work has already been definitely laid. Psychiatric clinics are endeavoring the same thing in connection with police and criminal courts and prisons. Even the police department should have the facilities of social service case work. The probation officer of the courts should be a case worker and corresponds to the social worker in a hospital. As Stearns has said: "The whole undertaking of a criminal court is a social service proposition . . . the court is (like) the out-patient department of the hospital . . . the staff of a prison should be analogous to the staff of a hospital . . . our present situation is as if there were no visiting staff at the city hospital, individuals being sent there for confinement."

Psychiatric clinics are of great value in juvenile courts, municipal or magistrate or police courts and criminal courts. Their importance in juvenile court work is now unquestioned.

THE PSYCHIATRIC CLINIC IN CRIMINOLOGY

Its value to police, magistrate or municipal courts is shown by the work of the Municipal Psychopathic Laboratory of Chicago which works in conjunction with the municipal courts. The primary function of this laboratory is to act in an advisory capacity to all judges of the Municipal Court in connection with the cases of prisoners in whom there is a suspicion on the part of the judge of the existence of some personality disorder, mental disorder or mental retardation. It thus has an opportunity of examining, not merely the frank or suspected mentally disordered or mentally retarded persons but also a certain number of chronic or repeated offenders, chronic alcoholics and drug addicts, chronically dependent and unemployed, and other malad-

justed and inadequate personalities. It has referred to it cases from such specialized courts as the Boys' Court, Morals Court and Court of Domestic Relations, as well as from the unspecialized police courts scattered throughout the city.

From August 1, 1929, to December 31, 1930, during which period I was connected with this laboratory, there were examined in the Municipal Psychopathic Laboratory of Chicago 1,501 separate cases of whom 602 or approximately 42 per cent. had a psychosis of one type or another; 304 or approximately 21 per cent. were mentally retarded; in other words, approximately two-thirds of the cases sent to this laboratory were either mentally disordered or mentally retarded.

It is to be noted that in spite of the fact that we examined a highly selected group of suspected mentally disordered or mentally retarded persons, a little more than one-third were found to be free from a psychosis or mental retardation. The types of psychosis are those usually seen in a psychiatric clinic with a predominance of paranoid states, dementia praecox and chronic alcoholism with deterioration.

I am indeed happy to say that recently, under the new Chief Justice of the Municipal Court of Chicago, John J. Sonstebj, the problems of probation are being studied by a special committee of experts appointed by him, with a view toward improvement by reorganization, and that under the new Clerk of the Court, Joseph L. Gill, the social service department of the specialized courts has been put on a professional basis. This shows a new spirit and a progressive attitude.

There is need of a psychiatric service in the House of Correction.

Psychiatric Service to County Jails and Criminal Courts. Psychiatry can be of help in several respects in connection with the criminal court and county jails.

In Massachusetts since 1921, there has been in existence what is called the Briggs Law. It provides for the following: any person indicted for a capital offense, and any person bound over or indicted for a felony who has previously been convicted of a felony, or indicted more than once for any offense, is under the law to be reported to the State Department of Mental Diseases which appoints two psychiatrists to examine and

report on his mental condition, the report to be available to the court, the district attorney, the counsel for the defense and the probation officer.

Under this law, according to Overholser, up to October 15, 1929, 1,114 cases have been reported and 844 or 75.8% examined with the following results: 178 or 21.1% were frankly or suggestively abnormal mentally; of these 178 cases, 40 were insane and committed; 30 were suitable for observational commitment; 82 or 9.7% were mentally defective; 16, psychopathic personality; one, epilepsy; and 9, dull or borderline intelligence. It is to be remembered that this was a selected group with no misdemeanor cases and except in capital cases (30% of the total) they had previously been in court on some serious charge. This law has practically eliminated court contests in Massachusetts so far as psychiatric expert testimony is concerned. A law similar to this in principle could be passed in Illinois.

In Massachusetts, according to Overholser, in the period of 13 years, approximately 11% of those indicted for murder were found insane and so adjudicated by the court.

Of a total of 14,690 cases in the Criminal Court of Cook County for a period of four years, comprising all types of cases, there were only 40 reported insane according to the court records.

So far as the county jail is concerned, Overholser has estimated that approximately 25% of the total population of penal institutions at one time is to be found in the county jail, and furthermore, of the total commitments to penal institutions for a year, almost 90% are commitments to county jails. For the year 1923, for example, approximately 320,000 persons were committed to the county jails in the United States, their average stay in the jails being approximately 33 days each, while in the State of Massachusetts he found that at least 50% of the persons so committed are known to have served previous sentences. What the figures are for persons committed to the Cook County Jail cannot be given, but it would not be surprising if it were found to be about the same as those for Massachusetts.

Of 4,576 male prisoners carefully studied and examined in the county jails of Massachusetts, the same author reports that 42% were from

17 to 30 years of age; 28.2%, 30 to 40 years of age; 42% had been arrested more than five times; 10.5% had served more than five sentences, and 46.3% had served at least one previous sentence. Psychiatric studies of this large group showed the following: 3.2% with a psychosis or neurosis, 7.2% mentally defective, 9% below normal or borderline intelligence, 38.2% alcoholism, 1.1% drug addicts, 15% psychopathic personality (emotional disequilibrium).

It is with pleasure that I add that through Chief Justice John P. McGoorty there is now an Advisory Behavior Clinic at the Cook County Jail which, I am sure, will render splendid service.

Psychiatry can be of value to the courts in the matter of probation by determining the bad risk, the unreformable and incorrigible offender for whom segregation for a sufficient, even indeterminate period is desirable and the good risk, the reformable type, who should be assisted to reorganization within the community, without confinement.

The Value of Psychiatry in Prisons and Reformatories. In spite of the above findings, it is noteworthy that psychiatric service is available in such correctional institutions as state prisons and reformatories and juvenile training institutions, rather than in the county jails and in connection with the courts. As evidence of the value of psychiatry in the state prisons, Martin, quoted by Singer, found that out of 1,700 men examined psychiatrically at Joliet Penitentiary from 1923 to 1927, the more striking types of mental abnormality comprise 22% which were classified as follows:

Psychoses

On admission

Still present	45
Now recovered	5

Within a year of admission

Still present	15
Now recovered	7

More than one year after admission

Still present	12
Now recovered	0

84 or 5%

Grossly psychopathic persons, including Schizophrenic and Paranoid personalities

Without behavior problems in prison	79
With behavior problems in prison..	47
With psychotic episodes.....	23

Homosexual (before going to prison)	20
Convicted of sexual crimes.....	20
Alcoholics with deterioration.....	35
Drug addiction with psychosis.....	1
Drug addiction without psychosis	15

235 or 14%

Epilepsy

With psychosis	5
Without psychosis	6

11 or 7%

Paresis

Cerebrospinal syphilis without psychosis	23
--	----

32 or 1.9%

Psychoneuroses (chiefly anxiety states)

13 or 8%

Total all cases..... 375 or 22%

Psychiatric clinics can be of value in prisons in connection with the diagnosis and classification of the individual and in giving advice as to occupation, discipline and parole.

As a result of the continued efforts of the American Psychiatric Association through its Committee on the Legal Aspects of Psychiatry, the American Bar Association and the American Medical Association have passed the following resolutions:

1. That there be available to every criminal and juvenile court a psychiatric service to assist the court in the disposition of offenders.

2. That no criminal be sentenced for any felony in any case in which the judge has any discretion as to the sentence until there be filed as a part of the record a psychiatric report.

3. That there be a psychiatric service available to every penal and correctional institution.

4. That there be a psychiatric report on every prisoner convicted of a felony before he is released.

5. That there be established in each state a complete system of administrative transfer and parole and that there be no decision for or against any parole or any transfer from one institution to another, without a psychiatric report.

As to the efficiency and inefficiency of our present penal system, a recent study entitled "Five Hundred Criminal Careers," by Sheldon Glueck and Eleanor T. Glueck, shows that out of 510 men who left the Massachusetts State Reforma-

tory at Concord, Massachusetts, 1911 to 1922, 80% were not reformed five to fifteen years later, but were still committing crimes. The fact that the average age at the time of commitment was 20.1 years, that over 60% were 20 years or younger at the time of entrance to the reformatory and that the average age of the first arrest was slightly over 16, shows that the problem is one of youth. These findings also show that the reformatory and parole have not functioned as efficiently as they should.

The Need for a Greater Variety of Institutions. Although it is estimated by the average layman that a certain proportion of persons who commit criminal acts are actually legally insane and need definite medical treatment in a hospital for mental disorders, the modern psychiatrist goes further and contends that many other individuals who are not legally insane in the sense above mentioned are nevertheless in need of special treatment in special types of correctional institutions. The psychiatrist contends that the mental history and condition of the offender is of great importance for guidance as to disposition. He holds that the present method of sentencing all offenders is comparable to what would be the case if all sick persons were sent to hospitals for a definite period with specific instructions that at the end of this fixed period these patients be sent home no matter whether they have made an early recovery or have developed serious complications.

The advisability of indeterminate sentence in special types of institutions is particularly important in the case of chronic or repeated or so-called habitual offenders or criminals. It is for this reason that there should be a special type of institution for the adult defective, that is, feeble-minded delinquent, as already exists in Massachusetts and New York. Delinquent defectives should not be in the same institution with non-delinquent defectives. The atmosphere of this special type of institution should be educational especially along manual, agricultural and industrial lines, rather than penal and an indeterminate sentence to such an institution is superior to sentencing the delinquent for fixed periods in the House of Correction and penitentiary. It should be remembered that defective delinquency is a combination of a so-called psychopathic or unstable personality with feeble-mindedness. Of course, there could also be insti-

tuted the registration method for feeble-mindedness employed in Massachusetts and the community control of the feeble-minded developed in that state.

There are also needed separate institutions for so-called psychopathic personalities with habitual criminality, who should also be given an indeterminate sentence with conditional release and with continued supervision and guidance as for parole prisoners. Many of these so-called psychopathic personalities who are confirmed or habitual criminals, so-called recidivists, are now confined in prisons, reformatories, houses and schools of correction, state hospitals for the insane and institutions for the feeble-minded. If entirely separate institutions for such individuals are not provided, then they should be handled in special divisions of the penitentiary.

Chronic alcoholic and drug addicts are in need of indeterminate sentence and prolonged supervision in farm or industrial colonies.

For the frankly criminal insane, modern hospital facilities are in order.

CONCLUSIONS

Modern psychiatry is interested not merely in institutional psychiatry but also in all behavior problems, including those of criminology. The findings of the Municipal Psychopathic Laboratory of Chicago and other similar clinics are discussed.

Psychiatry's contributions to criminology include the detection and separation of the mentally deranged and mentally retarded, the study of other maladjusted personalities with suggestions for their disposition, advice in probation and parole cases, the more intensive individual study of delinquents and criminals with an estimate of probable causes, outcome and recommendations for management. The basis of the psychiatric approach is a professional, progressive, scientific attitude toward the problems of criminology. Psychiatry has its legitimate place in the schools, police departments, courts, county jails, houses of correction, reformatories, prisons, as well as in private practice and public institutions for mental cases.

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185 North Wabash Avenue.

THE NURSE'S HEAVEN

When earth's last microbe has faded,
When catgut lies twisted and dry,
When all carbolfuchsin has faded,
And the youngest patient has died,
We shall sleep—and faith we shall need it!
Lie down for an aeon or two,
Till the Master of all good nurses
Shall call us to work anew.
And we who were cross shall be happy,
Have plenty of sunshine and air,
Use all the gauze that is needed,
With no one to watch or to care.
We shall have real saints to work on
Magdalene, Peter and Paul,
We shall sleep all night without hypos,
And have no hysterics at all.
And only the Master shall praise us,
And only the Master shall blame,
And no one shall work for money,
And no one shall work for gain,
But each for the joy of working,
And each in her separate star
Shall see the divine in her patients
And love them just as they are.

—Anonymous, from *Chicago Hosp. Assoc. Bull.*

Chocolate Bar: What am dese here dark specks in dis here oatmeal?

Dusky Man: Keep youh coat buttoned. Dem dark specks in dat dar oatmeal am dese here things dey call calories.—*Middlebury Blue Baboon.*

Society Proceedings

COOK COUNTY

CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY

Meeting, October 7, 1931

"Treatment of Tendon Injuries".....Sumner L. Koch
DiscussionR. W. McNealy
General Discussion.....Opened by the President
Fred W. Slobe, Pres. Sam'l S. Graves, Sec'y
F. P. Hammond, Program Chairman

CHICAGO ROENTGEN SOCIETY

Meeting, October 14, 1931

Symposium on Pathological Gall Bladder
Medical Aspect.....Milton M. Portis
Surgical Aspect.....Peter S. Clark
Roentgenological Aspect.....Davis S. Bielen
General Discussion

G. M. Landau, Pres. R. J. Maier, Sec'y

CHICAGO MEDICAL SOCIETY

Joint Meeting with Central Association of Obstetricians and Gynecologists

October 28, 1931

The White House Conference—General Facts and Its ActivitiesFred L. Adair

Maternal Mortality	
Palmer Finley, Omaha, Neb., and W. C. Danforth	
The Midwife Problem.....	
Percy W. Toombs, Memphis, Tenn., and F. H. Falls	
Medical Education and Its Relation to the White	
House Conference.....	
J. C. Litzenberg, Minneapolis, Minn., and E. D. Plass	

DE KALB COUNTY

Thursday, Oct. 22, 1931, the DeKalb County Medical Society was entertained for dinner by St. Mary's Hospital, DeKalb, Ill. Members of the Hospital Staff furnished the program.

Nineteen physicians were present. The following were elected by the County Medical Society to serve as the officers during the year 1932: President, Dr. Clifford E. Smith, DeKalb, who has served twelve years as secretary and treasurer; vice-president, Dr. Wendall A. Potter, Sandwich; secretary-treasurer, Dr. James C. Ellis, DeKalb; censor for three years, Dr. Elbridge W. Telford, DeKalb; censor for two years, Dr. Louise L. Culver, Sandwich; censor for one year, Dr. James S. Rankin, DeKalb; delegate of one year, Dr. Percy I. Hopkins, DeKalb, and alternate delegates for one year, Dr. R. A. Wright, DeKalb.

Dr. E. W. Telford presented a case of acute osteomyelitis of the femur in a little girl seven years old. An excellent recovery followed drilling of the bone for drainage purposes.

Dr. S. L. Anderson reported a case of multiple infected ovarian cysts which were drained through a laparotomy incision.

PIKE COUNTY

The Pike County Medical Society met in Barry, Thursday, October 22, 1931.

Dinner was served to the visiting medics by the ladies of the Methodist Episcopal Church, and was such a feast of fried chicken and all the accompanying good things that could be desired to go with it, as the ladies of Barry are well and favorably known for.

The meeting was called to order by Vice-President Rutledge, the President, Dr. T. D. Kaylor, being temporarily absent.

The Secretary stated that the minutes of the last meeting were printed in the State Journal, and moved to dispense with reading them, and the motion carried. There was no other business except that it was voted to establish a "flower fund," making an assessment for same each year.

The first number on the program was a paper on "The Child" by Charles D. Center, M. D., of Quincy. Dr. Center began with the statement that "every child under twelve years of age, who is persistently and continuously bad, is a sick child." From this opening statement he proceeded to show some of the many pathological conditions which tend to cause mental as well as physical abnormalities in the child, and that these children should come to the doctor for his kindly

consideration and treatment. This paper brought us face to face with the fact that we must not consider the bad child as just bad, and let him go at that, but as they come into our hands we must use every possible means to discover physical abnormalities, and to correct them, in the hope of correcting the mental abnormalities in so doing.

The second paper, given by Dr. Dudley T. Dawson of Danville, was upon "Duties and Responsibilities of the Psychiatrist to his Community." In a very informal manner, Dr. Dawson gave his interesting paper almost entirely avoiding the technical in his talk. Very fittingly his paper followed Dr. Center's, in consideration of mental conditions. The speaker quoted well-known authorities upon the respective importance of heredity and environment as factors in mental development, and told interestingly of his experience in court, in mental cases; with backward children and misfits in school; with mental misfits in society, generally, and once again brought to our attention the great importance of his specialty: of the work of the psychiatrist in his community.

The third paper on the program was given by Dr. T. B. Knox of Quincy, upon "Lay Relations with the Veterans Administration." Dr. Knox briefly pictured the work of the Examiner under the old or Service Connected Law, and how we are again going through a similar experience under the new law, which does not require that a disability to be compensable must be "service connected." He stated that he believed that 90 per cent of all cases either had, or were sincere in the belief they had compensable disabilities; that "the gold-bricker" was not more than one in ten of the applicants. He gave us much information as to what to do in making application, and cited some interesting cases that had come to him in his experience as an examiner.

The fourth paper on the program was given by Dr. Warren Pearce of Quincy. He opened his remarks by giving us a symptom-picture of a recent case of his which he diagnosed as poliomyelitis-anterior, and from this starting point gave us a very profitable, timely and interesting discourse upon Anterior Poliomyelitis. Especially was this paper timely, because of the present prevalence of Infantile Paralysis all over the country. Drawing on his personal experience, and upon the authors as well, Dr. Pearce handled the subject in a thoroughly scientific and scholarly manner.

All the papers given were pretty thoroughly discussed, nearly all the doctors present taking part in the discussions.

Colonel Holland of Springfield, who came with Dr. Dawson, spoke very briefly on Veterans Administration work, and his remarks were well received.

Aside from the speakers named several Quincy men were with us, making a total attendance of 25.

A vote of thanks was tendered to those who gave the program, and to the Barry brethren for their delightful entertainment. The meeting adjourned in due form to meet in Pittsfield in January.

F. N. WELLS, M. D., Secretary.

RANDOLPH COUNTY

The Randolph County Medical Society held a meeting at Sparta, October 20th, beginning with a luncheon at the Bates Hotel. The entertainment was given by the Ladies Auxiliary. Randolph County has a very active working organization headed by Mrs. C. O. Boynton, who presided during the social hour preceding the Scientific Program. Honored guests were the speaker of the evening Dr. J. C. Lyter of St. Louis and Drs. W. H. Smith, J. E. Reed and Edward Tegmeier of the Illinois Department of Public Health. Dr. Lyter spoke on the heart and his lecture was enjoyed by all and discussed by many of those present.

The doctors were grateful to Dr. Lyter and the able efforts of Mrs. Boynton and the other members of the Auxiliary for the successful meeting.

WILL-GRUNDY COUNTY

The Will-Grundy County Medical Society and Public Health Council desiring to reduce the infant and maternal mortality of the community and feeling that throughout a union of their combined efforts greater benefits will result, do hereby subscribe to the following plan:

1. The Public Health Council to furnish the nurses, clerks, and social service workers to carry the services provided to the public and keep accurate records of the patients benefiting thereby, together with an economic rating of all such patients.

2. The Will-Grundy County Medical Society to provide the medical and surgical service needed at rates within the reach of all.

3. To regulate the details for carrying out this plan and such matters as may arise from time to time there shall be appointed a committee consisting of a representative of the Public Health Council, one physician named by the Medical Society, and the health commissioner of Joliet.

4. A tentative detailed plan is hereby offered.

- (a) It shall be the function of the field nurses and social workers to locate pregnant women as early in pregnancy as possible, to teach them the need for and urge them to avail themselves of prenatal care throughout their pregnancy.

- (b) If economic reasons prevent the patient from availing herself of this care, the field worker should advise her of the service at reduced rates made available through the Public Health Council and local Medical Society.

- (c) The patient may then make application through the Public Health Council for this service, stating her husband's occupation and salary, any other source of income, number of dependent members of family, number of rooms occupied, rent paid, or whether home is owned and if so is it mortgaged.

- (d) The Public Health Council will check up further on the economic condition of the patient through the Joliet Credit Bureau and the family physician, if she has one.

- (e) The patient then will be given a card entitling

her to service on approximately the following basis from the physician of her choice.

- (1) Family income of \$1,000 to \$1,256 annually—yellow card—(half usual fee).

- (2) Family income \$750 to \$1,000 annually—red card—(third usual fee).

- (3) Family income \$500 to \$750 annually—green card—(fourth usual fee).

- (4) Family income nothing to \$500 annually—purple card—(fifth usual fee).

- (5) One hundred dollars (\$100) added to the above maximum for each dependent member of the family.

- (6) Patients now supported by the township, county, or other charities to be cared for free of charge by township or county physician.

TRI-COUNTY MEDICAL SOCIETY

The Tri-County Medical Society held its Annual Meeting at the Elk's Club, Monmouth, on Thursday, October 15, 1931, beginning at 4:00 p. m. Dr. Ralph Graham, president of the Warren County Medical Society, the host society, was in the chair.

Dr. G. H. Marquardt, Clinical Assistant in Medicine, Northwestern University Medical School, Chicago, was the first speaker, and talked on "Vascular Pains and Vascular Edema of the Legs—Their Diagnosis and Treatment." This talk was a very interesting discussion of this highly interesting subject, which was well presented, and discussed by a number of those present.

The next speaker was Dr. Lowell D. Snorf, Associate Professor of Medicine, Northwestern University Medical School, Chicago, whose subject was "Treatment of Peptic Ulcer and Its Complications." Dr. Snorf referred to the management of these conditions, and laid special emphasis on the recognition and treatment of the several complications of gastric and duodenal ulcer. This too, was freely discussed by members and visitors in attendance.

Dinner was served at 6:30 to approximately 150, and a short dinner program was given. Dr. Andy Hall, Director of the Department of Public Health, of the State of Illinois, gave an interesting talk on the work of the State Health department, referring to some interesting statistics recently compiled, showing that Illinois led all other large states in low death rate, at the present time. He also told of the distribution of convalescent serum in the treatment of poliomyelitis and some of the results from its use, reported recently throughout Illinois.

Following the dinner, Dr. Harold O. Jones, Associate Professor of Obstetrics and Gynecology, Northwestern University Medical School, Chicago, demonstrated his new motion pictures with sound. Although only scheduled for one subject, "The Treatment of Pelvic Infections," Dr. Jones was persuaded to show other interesting pictures, which were greatly appreciated. There was a general discussion of a number of interesting features in connection with the operations demonstrated.

The Tri-County Medical Society was formed some fifteen years ago, and has had interesting meetings each fall since its origin. There were approximately 160 at this meeting, many of whom came more than 100 miles,

to be present. There were many physicians from Eastern Iowa, in addition to the large number from Central and Western Illinois. Three members of the Council of the Illinois State Medical Society were present,—Drs. E. P. Coleman, of the 4th District, S. E. Munson, of the 5th District, and Chas. D. Center, of the 6th District. A check up of the attendance shows that there were physicians from 24 counties, which shows that even in rural communities, physicians are ever anxious to attend good medical meetings.

The Warren County Medical Society is indebted to the Educational Committee of the Illinois State Medical Society, for their assistance in arranging the program, especially to Miss Jean McArthur and Dr. James H. Hutton.

CHAS. P. BLAIR, Secretary,
Warren County Medical Society.

Marriages

NEAL DOW CRAWFORD, South Pekin, Ill., to Miss Bernadine L. Potts of Deer Creek, September 1.

BEN FRANKLIN KILGORE, Waterloo, Ill., to Miss Florence Martha Gieseke at Monmouth, September 15.

PAUL BUDD MAGNUSON, Chicago, to Miss Laura Chandler Thompson of Lake Forest, Ill., in Barrington, September 26.

CHARLES PHILLIP MILLER, JR., Chicago, to Miss Florence Lowden, at Sinnissippi Farm, Oregon, Ill., October 20.

Personals

Dr. James B. Herrick addressed the Medical History Club of the University of Illinois College of Medicine, Wednesday, October 28. Subject: "Auenbrugger and Laennec."

Dr. James H. Hutton, Chicago, addressed the La Salle County Medical Society, October 27, on "Recent Advances in Endocrinology."

Dr. Michael Goldenburg, Chicago, addressed the Peoria City Medical Society, October 20, on "Diseases of the Eye Encountered in General Practice."

The Stephenson County Medical Society was addressed, October 15, by Drs. Emmet B. Bay, Chicago, on "Cardiographic Tracings"; Bayard T. Horton, Rochester, Minn., "Buerger's Disease"; William T. Coughlin, St. Louis, "Brain Tumors."

At the fifty-fourth annual meeting of the Chi-

cago Gynecological Society, October 16, Fay-Cooper Cole, Ph.D., spoke on "Ethnological Status of Woman," and Dr. Morris Fishbein, "Two Famous Women of the Nineteenth Century."

Dr. S. M. Feinberg addressed the Will-Grundy society at Joliet, November 4, on "Allergy in Everyday Practice."

Dr. M. Herbert Barker, Chicago, addressed the Lake County, Indiana, Medical Society, October 8, on "The Management of Chronic Nephritis."

Dr. Frank P. Norbury of Jacksonville addressed the Sangamon County Teachers Institute at Springfield, October 23 on the subject, "Mental Hygiene in the Family."

Dr. Joseph Colt Bloodgood, Baltimore, addressed the Chicago Dental Society, October 8, on "Oral Cancer."

Dr. Leopold Benno Bernheimer, among others, addressed the Chicago Society of Allergy, October 19, on "Allergic Nasal Disease."

Dr. Ralph A. Kinsella, St. Louis, addressed the Adams County Medical Society, October 12, on "Treatment of Streptococcal Infections."

Dr. Arthur E. Hertzler, Kansas City, Mo., addressed the Vermilion County Medical Society, October 6, on goiter.

The Chicago Neurological Society was addressed, October 22, by Dr. Joseph A. Luhan, among others, on "Some Postural Reflexes in Man."

Dr. Sumner L. S. Koch addressed the Chicago Society of Industrial Medicine and Surgery, October 7, on "Treatment of Tendon Injuries."

Dr. Francis E. Senear, Chicago, addressed the Peoria City Medical Society, October 6, on "Modern Conceptions Concerning the Treatment of Syphilis."

The Chicago Ophthalmological Society was addressed, October 19, among others, by Dr. Vilray P. Blair, St. Louis, on "Blepharoplastic and Ptoxis Operative Procedures."

Dr. John A. Bigler, Highland Park, Ill., among others, addressed the Chicago Pediatric Society, October 20, on "Effect of Tonsilectomy and Adenoidectomy on the Schick Reaction."

Dr. Evarts A. Graham, St. Louis, addressed the St. Clair County Medical Society, October 1, on "Lowering the Mortality After Operations on the Biliary Tract."

Dr. John de Jarnette Pemberton, Rochester, Minn., addressed the Sangamon County Medical Society, October 1, on "Problems in Surgery of the Thyroid Gland."

Dr. Augustus C. Pohlman, St. Louis, gave an illustrated address on "Anatomic Fundamentals of the Mechanics of Audition" before the Chicago Laryngological and Otological Society, October 5.

Dr. William Bloom addressed a joint meeting of the Institute of Medicine of Chicago and the Chicago Society of Internal Medicine, October 23, on "Recent Studies on the Origin and Interrelationships of the Blood Cells."

Dr. Charles F. Harmon, Springfield, has been appointed chief of the division of social hygiene in the state department of public health, succeeding Dr. Ira Chester C. Copelan, who held the position about eleven years. Dr. Harmon's appointment became effective, October 1.

Dr. Max Cutler, formerly director of cancer research, division of cancer, Department of Hospitals, New York, has been appointed director of the recently established tumor clinic at Michael Reese Hospital. The formal opening of the clinic took place, October 9, at which time the Louis A. Greensfelder Memorial Lectureship was given.

Dr. Russell M. Wilder recently resigned as professor of medicine at the University of Chicago to join the staff of the Mayo Clinic and the faculty of the Mayo Foundation Graduate School of the University of Minnesota in a similar capacity. Dr. Wilder was formerly connected with the Mayo Foundation. He has been at the University of Chicago since 1929.

News Notes

—The Michael Reese Hospital will conduct a course on oxygen therapy, November 17-20. There will be lectures, discussion and demonstration of the principles and application of oxygen therapy, the use of carbon dioxide-oxygen mixtures in various conditions and the important types of oxygen therapy and resuscitation apparatus.

—Sir Thomas Lewis, English cardiologist and member of the National Research Institute of London, delivered the first Frank Billings lecture of the Thomas Lewis Gilmer foundation

of the Institute of Medicine at the Murphy Memorial hall October 31.

—A symposium on the pathologic gallbladder featured the meeting of the Chicago Roentgen Society, October 14. The speakers were Drs. Milton M. Portis, Peter S. Clark and David Beilin.

—Sir Thomas Lewis, London, gave the first Frank Billings Lecture of the Thomas Lewis Gilmer Foundation, October 31, on "Pain in Muscular Ischemia and Its Relation to Anginal Pain." This will be a regular meeting of the Institute of Medicine of Chicago.

—The Chicago Pathological Society was addressed, October 12, among others, by Drs. P. Arthur Delaney on "Dual Carcinomas, Primary in the Lung and in the Prostate," and Graham A. Kernwein, "Combined Congenital Exstrophy of the Female Urinary Bladder and Cloaca."

—Four new educational bulletins on health, published by the state department of public health, are now available for free distribution in the state. The titles of the bulletins are Tularemia in Illinois, Infantile Paralysis, Animal Experimentation, and Diet, Health and Intelligence.

—The third annual William T. Belfield Lecture of the Chicago Urological Society was delivered, October 29, by Dr. Anton J. Carlson, professor of physiology, University of Chicago, on "Rejuvenation."

—At a meeting sponsored by the Logan County Medical Society, September 24, more than 200 physicians of Central Illinois were addressed, among others, by Dr. Budd Clarke Corbus, Chicago, on "Newer Ideas in Immunology," and Dr. Harry Mortimer Richter, Chicago, "Gastric and Duodenal Ulcers," illustrated.

—An outbreak of scarlet fever, involving at least nine cases, occurred in Alton and vicinity during the first two weeks of September. A raw milk supply from a local dairy was held responsible for the outbreak in Alton. The dairy was immediately closed. It was the first milk-borne epidemic in the state since October, 1929, when there was a milk-borne outbreak of typhoid in Carbondale.

—Dr. Allen O. Whipple, professor of surgery, Columbia University College of Physicians and Surgeons, New York, addressed the Chicago

Surgical Society in joint session with the Institute of Medicine of Chicago, October 2, on "Anatomical and Physiological Variations in the Duodenum Considered from Embryological and Clinical Standpoints." This was the third annual Arthur Dean Bevan Lecture of the Chicago Surgical Society.

—A resolution was adopted at a meeting and dinner of the Marion County Medical Society, September 24, in Centralia, which provided for the formation of a tri-county medical society to include the counties of Washington, Clinton and Marion. The president of the society was instructed to appoint committees to perfect the organization. The guest speakers included Drs. Jonas Curtis Lyter and Frank J. Tainter, St. Louis, whose subjects were "Bronchial Asthma" and "Pain in the Anatomical Region of the Fifth Nerve," respectively.

—The new laboratory building of the University of Illinois College of Medicine, which was opened with the beginning of the fall term, October 5, was erected at a cost of \$1,500,000. The first floor is given over to the administrative offices and office of the dean; the second, to physiology; the third, to physiologic chemistry; the fourth, to pharmacology, and the fifth, sixth and seventh to anatomy. Other buildings in the proposed medical center at Illinois, which have been completed, are the general hospital and outpatient department, research laboratory and library building, orthopedic and psychiatric institutes, institute for juvenile research, nurses' home and power plant. The building planned for the college of dentistry will also house the departments of bacteriology and pathology. The state department of public welfare is cooperating with the university in this building program.

—As a number of doctors from Illinois and neighboring States were members of the physicians' tourist parties that visited Vichy in the last two years and as others may be contemplating doing so next year, it is of interest to note that the International Congress of Biliary Lithiasis will take place at Vichy, France, during the last days of September, 1932. The meetings will be held in the new Thermal Establishment now in process of completion at Vichy, that institution, with its unique equipment, will furnish a most suitable setting for a meeting of this character. This Congress will be the first of a series

of similar medical gatherings at Vichy to consider diseases of the liver and affections related to it.

Deaths

GEORGE SHERIDAN CULVER, Sandwich, Ill.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the Illinois State Medical Society; formerly mayor of Sandwich; aged 64; died, September 29, of heart disease.

WILLIAM ALLEN DIXON, Decatur, Ill.; Kentucky School of Medicine, Louisville, 1892; Illinois Medical College, Chicago, 1895; formerly member of the board of health; aged 65, died, September 11, of diabetes mellitus.

GEORGE B. M. ERWIN, Granite City, Ill.; Barnes Medical College, St. Louis, 1900; aged 68; died, September 2, of cerebral hemorrhage.

HARRY M. FERGUSON, Morris, Ill.; Rush Medical College, Chicago, 1890; a Fellow, A. M. A.; past president of the Grundy County Medical Society; aged 61; died, September 4, of angina pectoris.

FRANCIS MARION INGALLS, Highland Park, Ill.; Rush Medical College, Chicago, 1888; a Fellow, A. M. A.; aged 71; on the staff of the Highland Park Hospital, where he died, September 22, of cholecystitis.

JAMES R. KENTON, Raymond, Ill.; Beaumont Hospital Medical College, St. Louis, 1899; a Fellow, A. M. A.; aged 61; died, September 22, of carcinoma.

HOWE BAYARD LANGSDALE, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1908; member of the Illinois State Medical Society; on the staff of the Ravenswood Hospital; aged 45; died, September 23, in St. Luke's Hospital, of acute pyelonephritis following nephrectomy for removal of stone in the left ureter.

HENRY BALDWIN LLOYD, Evanston, Ill.; Tennessee Medical College, Knoxville, 1899; aged 61; died, August 28, in the Evanston Hospital, of mesenteric thrombosis and peritonitis.

CHARLES HOPKINS LONG, Chicago; McGill University Faculty of Medicine, Montreal, Que., Canada, 1888; on the staffs of the Illinois Eye and Ear Infirmary, and the Post Graduate Hospital; aged 67; died August 19, in the St. Francis Hospital, Escanaba, Mich., of injuries received in an automobile accident.

SAMUEL LUTHER MCCREIGHT, Oak Park, Ill.; Rush Medical College, Chicago, 1885; aged 82; died, September 27, of chronic myocarditis and arteriosclerosis.

PERRY C. THOMPSON, Evanston, Ill.; Rush Medical College, Chicago, 1883; member of the Illinois State Medical Society; aged 81; died, August 13, of heart disease.

HENRY W. WOLFE, Tamaroa, Ill.; Barnes Medical College, St. Louis, 1898; member of the Illinois State Medical Society; aged 61; died, September 18, of heart disease.

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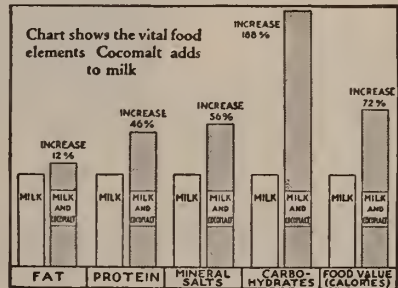
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2 teaspoons Knox Sparkling Gelatine.....	4.5	4
¼ cup cold water.....
½ cup hot water.....
½ teaspoon salt.....
¼ cup vinegar.....	..	..	..	..	..
1½ cups grated cheese.....	150	43	54	..	..
½ cup chopped stuffed olives.....	70	1	19	8	..
½ cup chopped celery.....	60	1	..	2	..
¼ cup chopped green pepper.....	25	..	..	1	..
½ cup cream, whipped.....	75	2	30	2	..
Total	51	103	13	1183	
One serving	8.5	17	2	197	

Soak gelatine in cold water. Bring hot water and salt to boil and dissolve gelatine in it. Add vinegar and set aside to chill. When nearly set, beat until frothy, fold in cheese, olives, celery, pepper and whipped cream. Turn into molds and chill until firm. Unmold on lettuce leaf and serve.

SPANISH CREAM (Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
1 tablespoon Knox Sparkling Gelatine.....	7	6	..	..	..
¼ cup cold water.....	..	..	..	..	..
1 cup milk.....	240	7	10	12	..
¾ cup boiling water.....	..	..	..	..	..
2 eggs.....	100	13	10.5	..	..
1½ teaspoons vanilla.....	..	..	..	..	..
Few grains salt.....	..	..	..	..	..
Total	26	20.5	12	336.5	
One serving	4	3	2	56	

Soak gelatine in cold water five minutes. Heat water and milk over boiling water, add gelatine and stir until dissolved. Separate eggs and beat yolks until lemon colored. Stir gelatine mixture slowly into egg yolks. Return to stove and cook over boiling water until mixture begins to thicken. Remove from stove, add vanilla and salt and chill. Beat egg whites until stiff and fold into jelly when almost set. Mold and chill until firm.

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Editorials

GOVERNMENT DICTATION OF MEDICAL PRACTICE HAS REACHED AN ALARMING STATE

Once a traveler in North Carolina alighted from his horse to help an old woman to fight a forest fire. His clothing was soon ablaze and the old lady, choked with smoke, made frantic signs at him. "My good woman," said he, "why do you object?" "I am not objecting, sir, I am telling you something." Like the old lady, we are telling you something which was perfectly apparent to some of us a decade or more ago and which should be positively apparent to every physician at the present time.

The tendency of the Federal Government is to extend its powers and activities far beyond the original purposes contemplated by the framers of the constitution.

The idea of Federal domination of medical practice as well as in other matters is being generally agitated by small but active factions in our country. The movement has reached an alarming strength. The unhappy omen is, that so many Americans are utterly unaware that this movement indicates that there is to be an essential change in our form of government.

The danger which every republic should fear is overcentralization, with the subsequent substitution of domination by one man for the rule of the people. Germany is the historic symbol of absolutism. We have just concluded a war, undertaken, we are told, that democracy might not perish from the earth. If this is true, to attempt to centralize in Washington the management of affairs that rightfully belong to the respective states is to create a system which cannot but destroy democracy among our people by betrayal of principles which are the fundamentals for the maintenance of government.

The centralization of power, whether in industry, commerce, education or the trade or professions or other factors entering into affairs of our everyday life amounts to this: That if we

grant to an individual the power to make standard or be the sole authority to revise, abolish or fix conditions under which the people of the future have to live, work and be educated we set up an oligarchy which will create and foster bolshevism.

Another tendency is to foist bureaucratic institutions upon the people with its added swarms of employees. Such swarms are bad enough wherever found, but in the management of government practice of medicine will be fatal to the interests of the people.

Personal freedom is in danger, and personal freedom is an essential condition for progress in society. Government ownership of anything tends to shackle freedom. The balls and chains on the hands and feet of a convict in prison are quite bearable in comparison with the shackles which government practice of medicine would forge upon members of society.

Bureaucratic administration and government practice of medicine will mean compulsory shifting of duties proper to the individual to a subsidized governmental agency and this in the end will destroy the initiative, self-reliance and independence, without which democracy generates into autocracy.

Socialistic schemes, such as health insurance, state medicine, lay distribution of medicine and other intended set-ups for the control of medicine would be the opening for the thousands of similar laws that would follow. In a short time after the enactment of initial ones the government would be embarking wholesale in enterprises for which no constitutional bill of rights exists, and which forthwith establishes a socialistic state. And where would it all end? We know where it ended in ruined Russia. Are we a people so favored that we can sow the wind and fail to reap the whirlwind, that we can play with pitch and elude defilement; set in motion efficient causes and escape effects; establish a system of autocracy embracing every human activity and continue to be a nation of free people—a republic—an indestructive union of indestructible states?

Parliament, it has been said, is omnipotent, but even parliament cannot create adjacent hills without intervening valleys. Can the people of America set up industrial autocracy in Washington without resulting industrial slavery? Perhaps, but only in those idyllic days when the lion

and the lamb lie down together and when without restraint the festive cow (?) shall vault over the silvery moon, and everywhere by act of congress, five is the sum of two plus two.

One hundred years ago the signers of the Declaration of Independence, the framers of our National Constitution, never dreamed of the possibility of the federalization of everything in the United States. Today we are facing the federalization of medicine as exemplified in the Shepard-Towner Bill, the federalized school as represented by the Smith-Towner Bill and these, if enacted, will be followed by and used as justification for the federalized church or federalized method of worship and of all details of daily life.

Medical men should be wise to the situation. The current of present-day social talk is strong for federalized medicine. The movement must be headed off or directed rightly. It is part of social wisdom to erect breakwaters which will deflect erring currents into socially useful channels.

Before the movement gains further headway the medical profession as well as the public should be brought to a realization of the harmful influences resulting from the establishment of a bureaucratic form of government.

The medical profession should unitedly vigorously oppose any and every scheme brought forward which is intended to fix with practical irrevocability essential changes in the management of our every-day affairs for the good and sufficient reason that the welfare of generations of Americans yet unborn and the future efficiency of medical practice hang in the balance.

With Senator William H. King of Utah (congressional record Feb. 10th, 1921) we agree "that the struggle is now on between the consolidated and powerful Federal Government, dominated by bureaucratic forces, and the rights of the people as individuals, as the sources of power and authority, and the rights of local communities and of the states themselves. And the voices that should be strong for local self government, for personal liberty, for freedom, and for those principles and policies that make a strong and democratic people, seem to be silent, and the strident cries of the centralized forces in the land either frightened the people into submissiveness, or win them to the acceptance of dangerous and destructive policies.

What we need now is a leader who will arouse

the people to the necessity of putting hooks in the jaws of the federal government and of reviving the spirit of personal independence and local self government which inspired our fathers in the days of the revolution. . . . I wish a crusade would be inaugurated in all parts of the land against the accursed spirit of bureaucracy and paternalism. . . . Congress is becoming so impotent that many believe . . . we sit in this chamber merely to O. K. bills prepared by government officials. It has been charged that we lack courage to support the charge."

For two decades we have fought persistently and consistently against an overcentralized government in Washington, against the lay dictation of practice of medicine, and against the encroachment of the United States Government into the practice of medicine in fields other than prevention of disease. If democracy (as well as industry and medicine) is to survive these evils must be stopped. Already we have built up in the United States a most dangerous form of tyranny, a meddling paternalism that knows no master. Of the scores of paternalistic bills threatening Washington it is meet to note that Senator Borah has said:

"The course we are now pursuing will prove in the long run more dangerous to our government than a foreign foe." Senator Borah further said: "A proud strong Nation may suffer a reverse in arms but time may still find it triumphant. An independent and self-reliant people may be overcome by the fortunes of war, but time fights on their side to final victory. But a nation whose citizenship has been drugged and debauched by subsidies and gratuities and bonuses, who have surrendered to the excesses of a treasury orgy has taken the road over which no nation has ever yet been able to effect a successful retreat."

Politics, led by loud voiced self styled friends of the people is making steady inroads into every activity, and there is going to be only one outcome. The whole practical progress of the country is going to slow down. A certain type of politician gets office and power by demanding laws or government action for every ache any one of us has. But American progress and prosperity have been maintained not by government or politicians but often in spite of them. They are the product of the free energy, initiative, and intelligence of private enterprises, and we barter

our birthright for a mess of pottage if we turn from that wise policy to government aid, bureaucracy and political officialdom. We have no excuse for making such a blunder, for the latter system has been demonstrated in the old world and is one of its chief burdens today.

Repeating what we have preached in this Journal and elsewhere for twenty years, we still believe in the essential virtues—self reliance, thrift, subordination of expediency to righteousness.

We have no sympathy with paternalism or undue dependence on the *Grandmotherly* state, either in medical or commercial affairs. We resent Governmental meddling in private affairs. We are a staunch supporter not only of state rights but of local autonomy, of local initiative, of neighborly co-operation. We admire the original plan of town government, a government of the citizens and by the citizens.

MEDICAL ECONOMICS HAVE BECOME A NATIONAL PROBLEM

Thoroughly aware that conditions in medical economics were bordering on chaos, allied interests in 1917 laid the foundation for that well publicized group of investigative and research workers that has come to be known as The Committee on the Costs of Medical Care. Supported as it is in large degree by private interests and foundations the group carrying on this survey of medical economics has among its personnel representatives of private practitioners, public health service, institutions with special interests, the social sciences and the public at large. Yet some of the findings have lain peculiarly along those essential lines that medicine must pursue to save itself and its constituency from the menace of socialism as vested in state medicine, working through paternalism, and alive through advertising.

One of the activities indicated at the outset as a logical inference from the findings of this committee is that it behooves every medical organization, association and society to maintain a well organized department of public relations. The public itself must be educated through a constructive publicity program of the relationship of medical science and the general public and their requisite united front of defense against the lay interferer and the charlatan.

Among other angles for this necessity is the revelation, unconscious though it be, in the committee's finding of the extent to which paternalism is undermining the backbone of the good Americanism.

Glance but a moment on the significant item of ultra paternalism in the workings of many employers. The Johnson-Endicott Shoe company is among those paramount. Costs of full medical care to the employe is there carried by the employer without wage deduction and at a rate of \$21.80 per annum. This is an example of the latest adventure of those philanthropists who began their medical interference first by contributing liberally to regular medical institutions and who proceed to the idea of having a little hospital of their own. This paternalistic attitude at the outset deceives even the donors themselves. Recognizing the value of better medical service to its employes, industry, to do it justice, is not so much trying to run the practice of medicine perhaps as to squeeze the last ounce of healthful and efficient labor from its payroll. To that end the laborer, if worthy of his hire must also be kept worthy of his work by health. But why this should be done at the expense of the medical profession is another theory for Einstein to formulate.

One employer said frankly according to an undisputed authority, "Industry is not rendering medical service to employes because of our espousal of paternalistic doctrines, BUT BECAUSE IT HAS BEEN PROVEN BEYOND A REASONABLE DOUBT THAT FULL HEALTH SERVICE TO EMPLOYEES IS GOOD BUSINESS AND PRODUCTIVE OF FINANCIAL RETURNS TO INDUSTRY, TO SAY NOTHING OF THE ADVANTAGES TO THE EMPLOYEE AND HIS FAMILY." In defense of this attitude industry complains that doctors who can cope efficiently with medical problems are unavailable. In this the survey finds there is element for justification. Medical schools in their current re-adjustment should incorporate a department for training students in medical insurance and commercial economics, and for getting the public in line with the medical idea.

Insurance companies, with their ear ever to the ground as is the habit of those who deal with one eye on finance and less than half of one on

humanitarianism, are on the alert for the possibilities of forced future health insurance. One company has gone so far as to prepare elaborate data that is an eye-opener to the men asleep at the prescription desk.

It is set forth also that practicing in competition with other ethical physicians there are in this country about 150 private group clinics, the majority of which function in the Middle West. Chicago is well beset. There are innumerable cults, paths, religions and isms and practically pure commercial practitioners besetting the path of efficient medical practice to the detriment of public welfare. And none of these are cramped in self eulogy, nor behind hand in the ways of advantageous economics.

Medical economics have become a national problem. If the doctors offer no solution, the laity will. It is not enough that organized medicine shall be on the defense. The need for it to offer is co-operative defense. The public is the plaintiff or thinks it is, and feels that its antagonism to the medical profession is well justified. Oddly enough the profession itself is the last group in the world to sense this antagonism.

Medical economics needs two things. First general dissemination of medical conditions today and secondly organized and definite leadership to bring about a way to set things right.

THE PROBLEM OF TUBERCULOSIS IN YOUNG GIRLS AND THE WORKING PERIOD IN MEN

Tuberculosis, or the white death, both loves and gets its shining mark. Deaths from tuberculosis in Illinois in females affords one of the staggering classes of excess mortality. Not only are the figures quite out of bounds in themselves, but they are far too much greater than pro rata figures for men.

Especially is this true of the statistics of the group of females between 14 and 30 years of age. In this group according to the state survey the rate among girls and women between the years of 10 and 35 is forty-two per cent. greater than it is between the male sex of the same age group. Now speaking generally the ravages of consumption or tuberculosis have declined, among all other age and sex groups. Since

tuberculosis is one of the most sensitive indexes to the way of living in hygienic error, it is vital to public welfare that a program shall be arranged to conform to the methods of combating this inroad into this especial group. Fads in food, in dress and in the general type of physique have been discovered to predispose to tuberculosis. So also is the inevitable biological function of women, Nature's continuous curse upon the sex.

Research shows plainly that the exercise of menstruation creates a physical condition particularly favorable to tuberculosis. Laziness, ineptness, lessened physical vigor on those occasions is not a whim but a warning.

There is no doubt but that modes of dress in women at the present day, rather than installing a "hardening" program lead to much illness. It is surely not right that girls of from six to 12 years shall go through the severity of winter in climates of that section of the temperate zone chiefly occupied by the United States. If the biologic function is responsible for conditions leading to increase of tuberculosis in this group of girls and women it would seem feasible that some attention be paid to the pre-biologic age. We have all of us seen girls ranging in age from eight to twelve or even older, with limbs almost as long and certainly as thick as many a matron with the entire leg bare from the lower calf where the sock top ends to the very brief bloomer or short coming scarcely more than two inches below the hip bones, and in the most extreme and picturesque of the modes cut so as to slide over the hip bone. The frock and perhaps brief petticoat worn with such garb are cut so as to end anywheres on even line with the lower genitals to perhaps two inches above the knee. To be smart the youngster, especially under seven must wear the briefer garment.

Supposedly long leggings and a short reefer are added to this costume in frostiest weather but there are days and days and weeks and weeks when children, especially little girls, thus clad are to be seen in public thoroughfares, the tender flesh of their young bodies red and em-purpled with chill. Kidney, bladder and pelvic ailments can and do result from such exposure as surveys show. It is not intended to go into those affections here. Enough then to say that while tuberculosis results not from exposure to

cold but to direct infection or contagion that the impaired vitality resulting from such improper mode of apparel drain and plow the field for the sowing of the seeds of the dread scourge.

In the immediate pre-menstrual age such lack of care predisposes to an ailing sex life with the resultant horror of a diseased sexual system and its consequent mental and social lack of balance.

Nor does the hand of encouragement to tuberculosis stop there. The bare legged, in truth the bare buttocks fad for children finds rare compliment in the would be sylphlike forms with which now all women from ten years upwards would face the world.

Obesity is a dread destination. No physician would wish that enemy upon his own or upon any other patient. But the reducing fad is worse by far than the dead and gone mode of "tight lacing."

Though ladies might lace, they still could eat. It was all just a matter of drawing the stay-strings tighter. Now all that is changed. Upon a fat-free, restricted and curtailed diet the world of women would walk and win. Here the perfect paradox has out paradoxed itself. Malnutrition is one of the commonest causes of predisposition to tuberculosis.

This malnutrition is a child of many fathers. Lack of nourishing food is probably the chief villain. But it must not be forgotten that lack of sleep, excessive fatigue, little sunshine, and contaminated air are far from innocent.

Lack of sleep in this group of women from 10 to 35 years of age showing 1,402 deaths for girls as against 983 males arises from numerous causes. Night life in theaters, cafes, dances or other public amusement places where the air is contaminated from tobacco and liquor fumes, where the heat of rampant jazz measures, continuous dancing and the emotional excitement of the evening contribute to an overheated condition and a subsequent chill, inevitable from the inadequate "evening dress" now so ubiquitous is erecting a heavy toll. Not only does loss of sleep stand out as a consequence here but fatigue also entrains.

Economic exactions further increase loss of sleep and fatigue. Married women of child-bearing age fill in the ranks of the workers to a hitherto unprecedented degree. Even this and the workings of the biologic function—though

customary continuous use of contraceptives is far from a first aid to health under these conditions might not entail an over fatigue were it not that in these instances the greater percentage of so-called business women are at the same time efficient housekeepers. Taking a leaf out of the book of those unsung martyrs who, whether widowed or picking up some other burden laid down by the men of the house have gone to wage-earning and yet must continue as housekeepers, the young married wife and business woman of today carries the double burden until she breaks down.

Inherently a woman by her biologic structure is more subject to tuberculosis than is the male. Consequently greater precaution should be taken to hedge themselves about with bulwarks of defense. Consider that research studies involving daily observations and tests of normal healthy women with no duties to perform and carried out over a period of several months resulted in these partial findings. For all ages the death rate from tuberculosis was 55.0 among females and among males, 70 per 100,000.

In the group from 10 to 14, that for girls per 100,000 stood 14.7 as against 6.6 for boys; age 15 to 19 the rate was 62.3, for girls against 39.0 among the boys. In the 20 to 24 age group it stood 96.5 for females and 84.7 for males and from 10 to 35 years 52 per cent. greater in females than in males.

This condition calls for drastic steps. It would seem desirable while admitting the influence of the biologic function as a destructive agent to forefend so as to restore the physical balance altered by this natural depletion.

Remedies suggested are the usual prophylactic course. Sufficient nourishing diet, avoidance of fatigue, sudden chill or continued exposure, and as lavish as possible a supply of sunshine, rest, and fresh air.

Utopian conditions are not within the reach of all. But many sinners against the law of health can be taught to effect at least a partial repentance. It means merely the covering of silkclad ankles with galoshes in stormy weather, the wearing of sufficient underwear, not necessarily clumsy ill fitting garments—the clothing manufacturer has gone a long way to meet fashion's demands. It means too, sufficient food. The importance of nourishing food should be emphasized especially with the woman worker.

At noon she must have food. Simple, digestible, but nourishing. Teach your female patients that it is better to have an inch more on her waistline than an inch less in her lung.

Mortality from tuberculosis has decreased 64.68 per cent. in twenty-six years. But girls during their "teen" age and men during their productive working period are stubborn yielders to the decrease. Girls in the adolescent age are frequently notoriously poor eaters. The youthful underpaid working girl only too frequently sacrifices the needs of the inner body for the demands of the outer body. To be sure there is some excuse for this. Appearances must be maintained. The day of the "shabby genteel" in the business world is long since passed away. The working woman must maintain appearance not totally dissimilar to the petted parasite on a comparative pittance. The question is no longer "body and soul" but body and back. You can if you are a working girl cut out your breakfast and luncheon and almost your dinner but you cannot cut the cost one penny of a pair of stockings, of shoes nor of any other article of clothing. We have all had patients come to us, who self confessedly have lived for weeks on little more than bread and coffee or tea and not very much of either. For the girl on a small income the milk diet is her best chance. Unfortunately we have not yet evolved a system that will tend to the general public living away from home a nourishing homely economical grist of daily fare. The nearest approach to this element was the old fashioned boarding house that like the old-fashioned doctor is now in the limbo of what though personable and necessary is now passe.

The average modern child is comparatively free from errors of diet and it is a consummation devoutly to be wished that it might be liberated equally in the way of dress. Overheated rooms are a menace but super ventilation should be confined to the atmosphere and not to childish legs. A garter concern last winter had a doggerel slogan that held more than a grain of truth. "Cover the knees and avoid the sneeze" read the verse. Common colds with their very uncommon sequelae will find the first gate in the nursery barred against them by better protection of juvenile bodies in adverse weather.

Periodic health examinations are advised. This permits an early detection of tuberculosis

or other untoward infection. It is wise to remember that the great white plague is neither an immigrant's nor a sweat shop disease to the exclusion of the halls of the mighty and homes of the rich.

THE GROWTH OF BUREAUCRACY IN AMERICA

Samuel G. Blythe in the *Saturday Evening Post* outlines the growth of bureaucracy in the United States. We abstract from his article as follows:

"The people of the United States have watched for more than twenty years the decay so far as government is concerned, of the old, vigorous and successful American policy and creed of individualism and self help, and have been messed and mused about; taxed to the point where thrift and effort are penalized; regulated, restricted, uplifted, reformed and directed in their ways and walks by a crowd of political shysters whose only motive is self-interest; overwhelmed by an avalanche of useless and expensive laws and exploited by class legislation that had its selfish warrant in the desires of the class legislated for, regardless of the people, and the political necessities of the legislators who framed it. The people have seen the growth of a bureaucracy that has increased tenfold since the beginning of this century, and the expansion of the commission idea until commissions barnacle the ship of state in such numbers that little of the original hull can be seen, each commission providing salary and the sustenance to politicians at the expense of the people and not one in ten of them worth 5 per cent. of what it costs.

The people are coming, in a way, to realize that what they think is their democracy is in reality a political autocracy, and that all this benevolent and pious paternalism is, in fact, but the centralization of the power and authority of that autocracy, which extends not only to the regulation of their affairs, morals, enterprises, efforts, and the heavy and increasing demands on their capital and incomes, but seeks to dominate their opinion and to direct them all, like sheep, along stipulated lines that are agreeable and useful to those in power."

A MARK TO SHOOT AT

One of the problems of many Medical Societies throughout the country recently, has been

the collection of annual dues from members. It is the experience of all State Societies, and many County Societies scattered throughout the country that there has been a greater delinquency in payment of annual dues during 1931, than in many years.

The Illinois State Medical Society has had the same experience of all other societies, but in the case of one County Society, and an ambitious secretary, we wish to report that DeKalb County Medical Society has during the month of November, 1931, paid annual dues for 1932 for their entire membership.

Dr. Clifford E. Smith has been secretary of the Society for a number of years, but recently decided that he should be succeeded by another member. The Society unanimously elected Dr. Smith as President, and Dr. James C. Ellis Secretary, to succeed Dr. Smith on January 1st. Dr. Smith realizing the duties and responsibilities of all County Society Secretaries, and wanting to make the work of his successor easier the first year in office, collected 1932 annual dues from all Society members, and consequently the DeKalb County Medical was the first component Society to pay 1932 annual dues, and to date is the only one on the 100 per cent. list for next year.

It is quite probable that the depression has not affected the physicians of DeKalb County less than those in other counties, and what one Secretary can do, others should be able to do. With this start, the membership of the Illinois State Medical Society should not be decreased in 1932 by members dropping out on account of their inability to pay the small per capital tax assessment but on the contrary, every County Society Secretary should endeavor to not only maintain their membership, but actually increase it during the year.

INTELLIGENCE OF DRUG ADDICTS

Commenting upon the question which is sometimes raised as to whether or not drug addicts are worth reclaiming, Surgeon General Hugh S. Cumming, of the United States Public Health Service, recently stated that drug-addict prisoners who have committed offenses against the United States, and who are no longer taking drugs, show, according to preliminary studies of the Public Health Service, a greater proportion

of above average intelligence than is observed among non-addict prisoners.

Among the drug addicts studied, thirty in every one hundred were above average in intelligence; whereas eighteen in every one hundred prisoners not addicted to the use of drugs were above the average in intelligence. On the other hand, seventeen in every one hundred drug addict prisoners were considered to be normal but of dull intelligence; whereas one in every ten addict prisoners was mentally defective, and one in every six among the non-addict prisoners was mentally defective.

DR. EDMUND J. BURKE'S BOOK OF POEMS

Narrative poems are vogue again. Stephen Vincent Benet picked up the thread made so familiar to the youth of the mauve decade by Owen Meredith's "Lucille" as well as by its companion piece on every parlor table of the gay nineties, "Katrina" and "Bittersweet" by the late Dr. Josiah Gilbert Holland. Recently a contemporary and facile novelist, Alice Duer Miller, issued a novel in verse form that would seem sure to be evoking kindly comment. Comes now a candidate for Dr. Holland's mantle—or is it merely a ride on the gig-caught Pegasus?—in Dr. Edmund J. Burke, La Salle, Ill. An attractive volume of Dr. Burke's poems entitled "The Outcast" has been sent to this desk. Varied in theme and presentation the volume is bound to be of interest. Dr. Burke shows a facile familiarity with the standard, classic verse form of such masters of rhythm in language as Byron, Browning, Pope and Wordsworth. The lead poem from which the volume takes its name treats of the life of one individual caught securely by the laws of Karma. Much serious thought and able workmanship has gone into this volume. Perhaps the bit that will linger longest in the memory is the word etching—"Spring and Winter."

METHOD OF MATCHING BLOOD OF THE PATIENT WITH BLOOD OF THE DONOR

In matching blood of the patient with the blood of the donor according to type, the Moss method is the one most universally employed.

There are four principal types among patients, I, II, III and IV, and the donor is selected ac-

cordingly as his type can supply blood similarly composed and suitable for the patient. His number as donor corresponds to the type number of the patient.

Patients of type I are the best recipients, as this type can receive blood from all types of donors, I, II, III and IV.

Donors of type II can give to types I and II in patients.

Type III in donors can give to types I and II in patients and can receive from types II and IV.

Type IV is called the universal donor, being able to give to the four types of patients, but can receive only from type IV.

By blood-matching or blood-typing, is meant the mixing of the bloods without agglutination, or clotting.

Some surgeons insist that both donor and recipient should be in the same type group, but this is not a universal practice.

The danger in transfusion is that either the donor's or the recipient's red blood cells, or the red cells of both, may cause:

(a) Hemolysis, or breaking up of the red bloodcells;

(b) Agglutination, or coagulation in joining together, or

(c) Both hemolysis and agglutination may take place together.

Out of 100 persons tested the relative percentage of frequency in adult groups is as follows:

Type I—10 per cent.

Type II—40 per cent.

Type III—7 per cent.

Type IV—43 per cent.

ANNUAL MEETING AT SPRINGFIELD, 1932

Springfield is pleasurably awaiting the meeting of the Illinois Medical Society on May 17, 18, 19, 1932. Springfield is a city of national historical interest, which every Illinoisan and American should give at least one appreciative visit, and May is a delightful month in which to do this.

Hotel reservations should be made as soon as possible to avoid a last minute rush. Rooms can be had at varying prices, from the de luxe accommodations of the larger hotels, to those of the smaller, quieter, and less expensive hostels.

There is ample space for all and every purse can be suited.

The Committee on Hotel Accommodations will gladly co-operate in any way possible to make your Medical Week a success and pleasure.

It is keenly hoped that members will bring their wives and families along. The women of the Auxiliary of the Medical Society are planning a hearty welcome for the ladies and will exert themselves in every way to make this visit one to be remembered.

The Sangamon County Medical Society and their Ladies' Auxiliary also join in sending an urgent invitation to you, Dr. and Mrs. Physician, to come to Springfield for this Medical Meeting, on May 17, 18, 19, 1932, to visit us and to visit our town, the home of Abraham Lincoln, and the Capitol of your State.

Send your reservations direct to the hotels.

HOTEL RATES

Abraham Lincoln Hotel.	150 rooms	\$3.00-\$7.00
St. Nicholas Hotel.....	350 rooms	2.00- 6.00
New Leland Hotel.....	150 rooms	1.75- 7.00
Illinois Hotel	60 rooms	1.25- 2.50

There are other hotels which are smaller but comfortable.

DOCTORS DESIRING TO PRESENT PAPERS BEFORE THE 1932 MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY

Take Notice

SECTION ON PUBLIC HEALTH AND HYGIENE

All persons desiring to preface and read papers before the section on Public Health and Hygiene of The Illinois State Medical Society to be held at Springfield in 1932 should communicate with the chairman of the section, Doctor Arlington Ailes, LaSalle or Doctor Arnold Kegel, Chicago.

SECTION ON RADIOLOGY

Doctors wishing to present papers before the State Society meeting to be held at Springfield, May 17, 18, 19, 1932, kindly communicate with Dr. E. L. Jenkinson, Chairman, Chicago and Dr. P. B. Goodwin, Secretary, Peoria.

SECTION ON MEDICINE

It is desired by the officers of the Medical Section that any members desiring to present papers at the Springfield session notify *both* the Chairman and Secretary at the earliest possible date. Chairman, Dr. Warren Pearce, Quincy and Sec-

retary, Dr. W. H. Nadler, 8 South Michigan Avenue, Chicago.

SECTION ON EYE, EAR, NOSE AND THROAT

Any member wishing to present a paper at the Eye and Ear Section meeting at Springfield, May 17 and 18, will please communicate immediately with Dr. Frank Novak, Jr., Secretary, 30 North Michigan Avenue, Chicago.

SECTION ON SURGERY

Those wishing to read papers before the Surgical Section will please apply to James T. Gregory, 826 East 61st Street, or Sumner M. Miller, of Peoria, Illinois.

EDUCATIONAL COMMITTEE SERVES COUNTY MEDICAL SOCIETIES AND LAY GROUPS DURING NOVEMBER, 1931

SPEAKERS' BUREAU:

88—Lay meetings addressed by members of the Illinois State Medical Society.

1—Church group.

7—Parent Teacher Associations.

11—Women's Clubs.

44—High School Assemblies.

2—Home Bureaus.

3—Y. M. C. A.s.

5—Men's Service Clubs.

1—Nurses Association.

2—Women's Auxiliaries to county medical societies.

12—Young Mothers' Groups.

Reports indicate that these talks were appreciated: "Excellent Talk." "An excellent address, well delivered and appreciated." "We were all very well pleased with the talk and many expressed a desire to have the speaker again next fall." "Doctor A's talk to our organization was very instructive, beneficial and thoroughly enjoyed by all. He has a very pleasing personality and is 'easy' to listen to." "One of the best meetings we have had for some time." "Dr. S. gave a very interesting and educational talk. He told of things in such a way that all could understand what he meant. He kept the interest of all. His subject matter was well organized."

SCIENTIFIC MEETINGS:

25—Physicians addressed scientific meetings.

District Dental Meeting, Macomb—Harold M. Camp—"Some Interesting Problems in Eco-

nomics and Cooperation between the medical and dental professions."

Schuyler County Medical Society—Harold M. Camp.

Schuyler County—William D. Chapman.

Decatur Medical Society—R. K. Packard—"Medical Economics."

Will-Grundy County—S. M. Feinberg—"Allergy, Hay Fever and Asthma."

Southern Illinois Medical Association—

Charles A. Elliott—"The Management of Edema."

J. G. Carr—"Biliary Tract Disease."

A. A. Goldsmith—"Gastric and Duodenal Ulcer."

E. P. Sloan—"Goiter."

Knox County Physicians Club—Aaron Arkin—"Pulmonary Diseases and Their Differential Diagnosis."

Bureau County Medical—E. A. Oliver—"Practical Points in Dermatology."

Bureau County Medical—Leon Unger—"Allergy."

Rock Island Medical—Don C. Sutton—"Treatment of Pneumonia."

Ogle County Medical—R. T. Pettit—"Cancer."

Ogle County Medical—R. W. Dunham—"Tuberculosis."

Will-Grundy County Medical—E. A. Oliver—"Skin Diseases."

McHenry County Medical—Walter B. Netcalf—"Tuberculosis Clinic."

Jackson County Medical—Frank Deneen—"Pneumonia."

LaSalle County Medical—Robert I. Barickman—"Persistent Thymus."

LaSalle County Medical—John A. Wolfer—"Common Duct Diseases."

LaSalle County Medical—William H. Holmes—"The Nature and Treatment of Bright's Disease."

Will-Grundy County—Gilbert H. Marquardt—"Diagnosis and Treatment of Circulatory Disturbances and Edema of the Extremities."

DeWitt County Medical—Charles S. Williamson—"Pneumonia."

Paris Hospital, Paris—George deTarnowsky—"The Treatment of Fractures."

Paris Hospital, Paris—L. M. Hurxthal of the Lahey Clinic.

RADIO:

42—Radio talks given from WJJD and WGN, Chicago.

17—Regular broadcasts.

25—Young Mothers' Hour.

Charles J. Drueck—Bleeding Piles.

Herman P. Gunnar—Arthritis.

John M. Lang—Early Recognition of Cancer.

Frank G. Murphy—Arthritis.

S. C. Henn—The New Baby.

Charles E. Sceleth—Alcoholism.

Charles E. Franklin—Common Colds.

Maurice Lewison—Causes & Prevention of Heart Disease.

Oscar E. Nadeau—Goiter.

George P. Guibor—How to Catch a Cold.

George S. Livingston—The Nose and Its Common Ailments.

Leo Zimmerman—Varicose Veins.

G. Howard Irwin—Acute Appendicitis.

Bernard Maloy—Points of Interest Relating to Pneumonia to Avoid Pneumonia.

Alex S. Hershfield—Mind Health.

A Chicago physician writes the Educational Committee as follows:

"I wish to thank the Illinois State Medical Society for the opportunity of speaking over the radio. I hope the paper will fulfill the purpose for which it was intended. From general observation, I believe that the public is very much interested in the good work the society is doing. From a personal standpoint I feel that, during the preparation of this paper, my interest and knowledge of this subject was improved."

PRESS SERVICE:

493—Articles, regular service to newspapers.

27—Monthly service.

40—Newspapers, re meeting Perry County Medical Society.

90—Newspapers, re meeting DeWitt County Medical Society.

55—Newspapers, re meeting Madison County Medical Society.

31—Community newspapers, re meetings Branch Societies, Chicago Medical Society.

3—Chicago Association of Commerce, re meetings Chicago Medical Society and Special Societies.

739—Total Releases during November.

6—Health articles written and approved by the Committee:

- Diphtheria Control.
- Comfortable Shoes.
- Social Disease.
- Imitating Nature's Process.
- Inward and Outward Goiter.
- Hemorrhoids.

SPECIAL SERVICE TO COUNTY MEDICAL SOCIETIES AND AUXILIARIES:

- 273—Notices sent to physicians relative to Bureau County meeting.
- 130—Notices sent to physicians relative to Perry County meeting.
- 375—Notices sent to physicians relative to LaSalle County Meeting.
- 275—Notices for Woman's Auxiliary to Chicago Medical Society.

JEAN MCARTHUR,
Secretary, Educational Committee.

HOW'S IT BEING A DOCTOR IN RUSSIA?

All the dignity and authority of the medical profession in Soviet Russia is regulated by the Government.

There is not much private practice—there are few private hospitals—and the great majority of Soviet physicians are "working at fixed salaries."

This we learn from a Moscow correspondent of the London *Sunday Observer*, who goes on to say:

"That this socialization of medicine does not always work out very satisfactorily in actual life was shown when a brigade of volunteer investigators from the official organ of the Moscow Soviet, *Rabochaya Moskva*, made a flying survey of the medical institutions of Moscow and its environments.

"The first point that attracted the attention of the investigators was the extreme overcrowding of the hospitals and its accompaniment: the failure in some cases to render medical aid when it was needed.

"This last factor increased the number of fatalities. In the large Botkin Hospital, 40 per cent. of the deaths take place during the first five days after admission, 'mainly,' according to the investigators, 'because the patients were not received into the hospital in time.'

"The report also contains the statement: 'Patients who require surgical aid are in the most

lamentable condition. A month and a half may pass before the patient obtains a bed in the surgical department.'"

AMERICAN DENTAL ASSOCIATION TO ADVERTISE ETHICALLY

The American Dental Association in its National Convention, held at Memphis, Tenn., October 19 to 24, has decided to advertise.

This publicity will be handled by the American Dental Association through a new bureau that has been organized and which will keep the public informed on the care of their teeth, mouth hygiene, proper diet and the prevention of dental troubles. The theme of the publicity will be along the lines of prevention, and, if heeded by the public, will save the people of America millions of dollars in dental bills. Newspapers, magazines, radio and other forms of advertising media will be used in this publicity program, but in no sense will any individual dentists' names be mentioned nor fees quoted.

"Prevention" as a theme is an unselfish one, and the various messages that will be presented will make the public more dental-minded and cause them to stop neglecting their teeth, and, consequently, their health.

EXAMINATION BY AMERICAN BOARD FOR OPHTHALMIC EXAMINATIONS

The American Board for Ophthalmic Examinations will hold an examination in New Orleans on Monday, May 9, 1932, at the time of the meeting of the American Medical Association.

Necessary applications for this examination can be procured from the Secretary, Dr. William H. Wilder, 122 South Michigan Avenue, and should be sent to him at least sixty days before the date of the examination.

DIVORCE

A Chicago actress came into a lawyer's office and said to him: "I want a divorce."

"Certainly," said the lawyer. "For a nominal fee I will institute proceedings, and should experience little difficulty in procuring it for you.

"What do you call a 'nominal fee'?" asked the actress.

"Five hundred dollars," said the lawyer.

"Nothing doing," retorted the lady. "I can have him shot for ten dollars."

WHY "PASS THE BUCK" CONTINUALLY?

In this day and age, everyone feels that if he can get service without having to pay, that's good business; but look at it from the standpoint of the other fellow. We have some members who never, or very seldom, attend a meeting, even if it is held only a few miles from their place of business, yet they get all the protection and benefit that both the county and state society can extend. Why is it thus? Why should the lax fellow "pass the buck" continually? In this day too many physicians let their thoughts and concern pander to the indifferent mood. It surely has the aspect of "rotten" business and is unfair to the more faithful members who attend meetings and render service to the other fellow who may need it. What will the "buck-passer" say when the trickster gets hold of him, or when by some unforeseen mishap he needs help in the courts of justice when he is sued for an alleged case of malpractice? Think about it, non-attendant, and see what may possibly happen to you some fine day. Then your laxity will haunt you with a vengeance and you'll get a good sweating.

No insult can be inferred by the slang word—"buck-passer," inasmuch as it was stolen from another county society publication. The expression fits the ideas exactly; it hits the nail precisely on the head. There is more truth than poetry in the above dissertation.—Madison Co. Doctor.

SYPHILIS IN PRISONERS

During the last few months a blood examination has been made of each inmate in the Southern Illinois Penitentiary. These tests indicate that about 1 in each 5 of the prisoners is infected with syphilis. Approximately 3,000 tests were made on the prison population of 2,500, some repetitions in those who showed positive reactions accounting for the excess of tests over the number of individuals concerned. Treatment was recommended for 250 of the group who showed serological evidence of syphilis.

Carefully conducted surveys in various parts of the country indicate that not over 1 per cent of the general population in the United States is syphilitic. It appears, therefore, that among this particular prison population, syphilis is about 20 times more frequent than in the population at large.

UNITED STATES PUBLIC HEALTH SERVICE AGE AND SEX INCIDENCE OF INFLUENZA AND PNEUMONIA

The United States Public Health Service has recently completed a statistical study of the age and sex variation in cases of influenza and pneumonia. This study summarizes the age and sex variation in influenza and pneumonia morbidity and mortality during the 1928-29 and the 1918-19 epidemics. It is based on canvasses following each epidemic of families including nearly 150,000 persons in about 12 localities in the United States.

While there are some similarities in the 1928-29 and

1918-19 age curves, the differences are more striking than the similarities. The young adult peak in pneumonia incidence and in mortality in 1918-19 was absent in 1928-29.

Pneumonia incidence and the death rate were both much higher in 1918-19 than in 1928-29, but the percentages of pneumonia cases that were fatal were not greatly different in the two epidemics. There was a very large difference in the percentage of cases complicated by pneumonia in the two epidemics; but once pneumonia existed, the chance of fatal outcome was nearly the same in both years.

Statistical data of this kind give no clue as to the reason for the striking difference in age incidence in the two epidemics, and any attempt at explanation would be only conjecture.

THE BLIND AND DEAF-MUTES IN THE UNITED STATES

Statistics of the blind and deaf-mute population enumerated in connection with the 1930 census, classified by sex, color and age have been issued by the Bureau of the Census in a bulletin entitled "The Blind and Deaf-Mutes in the United States: 1930." This is a pamphlet of 23 pages, consisting mainly of statistical tables, showing the enumerated blind and deaf-mutes by geographic divisions and States as well as by cities of 100,000 inhabitants or more.

A total of 63,489 persons were reported as blind by census enumerators, and the ratio of blind to the general population, on the basis of the returns, was 517 per million.

A total of 57,084 persons were reported as deaf-mutes, the ratio of deaf-mutes to the general population, on the basis of the returns, being 465 per million in 1930.

In addition to those reported by enumerators either as blind or as deaf-mutes, there were 1,942 persons reported in 1930 as being blind deaf-mutes.

Of the individual States, New Mexico showed the highest ratio of blind to the general population, while Wyoming showed the lowest ratio.

Kansas showed the highest ratio of deaf-mutes to the general population, while Wyoming, which showed the lowest ratio of blind, showed next to the lowest ratio of deaf-mutes. The lowest ratio was shown by the District of Columbia.

In addition to the statistical tables, the bulletin which has just been issued contains a brief history of the enumeration of the blind and of deaf-mutes and a comparison of methods and results since the first enumeration, which was made in connection with the census of 1830.

A copy of the bulletin may be obtained by writing to the Bureau of the Census, Washington, D. C.

JUST THE SAME

He: "Can you make the cakes that mother used to make?"

She: "Yes, if you can put up with the indigestion father used to have."

Original Articles

PERNICIOUS ANEMIA*

W. P. ARMSTRONG, JR., M. D.

SPRINGFIELD, ILL.

Of the many forms of anemia that we, as practitioners, come in contact with, there is one form that has held the center of interest the past few years. Only five short years ago a diagnosis of pernicious anemia was a death sentence. Our professors had merely to quote Addison's original 1849 description of the disease to cover their subject. Namely, "Etiology unknown" and "resists all remedial efforts." The clinics were full of the cases and students had an opportunity of seeing them in all stages of relapse and remission.

The results of Whipple's experiments on dogs and the wonderful adaptation of the liver principle to human beings by Minot and Murphy in 1926 are known to everyone. This revolutionary work not only completely changed the prognosis for these cases but opened up great fields for investigative research regarding the etiology and dietetic treatment of pernicious anemia.

The purpose of this paper is to discuss the latest research contributions and to present the essentials for adequate treatment. This with particular reference to the potent materials that are used, the dosage, the effect of complications, the use of iron, and the importance of proper diet and regulation of the patient throughout his entire life.

Much of the material presented is by the kindness of Dr. George Minot, who sent a large amount of his experimental data, including work as yet unpublished. And more by the courtesy of Dr. Murphy and Dr. Sturgis, also former associates at the Brigham Hospital, who sent many reprints as well as many new ideas in regard to proper therapy.

One of the important newer contributions was the introduction a short time ago of another potent material to be used in the treatment of pernicious anemia. Up until 1929 liver, kidneys and brain had been used satisfactorily and exclusively. At this time Sturgis and Isaacs began feeding desiccated hog stomach to their cases with completely satisfactory results. They found

it just as effective as liver and found that it can be produced more cheaply since it utilizes a tissue which is otherwise waste material. The mucosa as well as the stomach muscle is potent and the effective substance is soluble in water and is heat labile. This differs from the active principle in liver, which is heat stable. The final product is dried and defatted, has very little taste and only a slight odor. Sturgis advises ten grams of the desiccated stomach per million deficit in red cells per day as a maintenance dosage.

Also working in this general field of research was Dr. William B. Castle and it was he who presented proof of the relationship between gastric function and pernicious anemia.

Dr. Castle fed slightly cooked hamburger steak to normal persons and allowed it to digest for an hour before recovering it with a stomach tube. This material then introduced daily into the stomach of a pernicious anemia case caused a remission analogous to that of liver. This suggests that gastric digestion in patients with pernicious anemia is defective since it is unable to liberate from protein a substance which prevents the development of pernicious anemia; viz., a substance, which, if it were present, would allow for complete maturation and release of red blood cells. In the normal person this unknown blood controlling substance may be stored in the liver or kidney but must certainly have as its original source, the stomach.

This proven fact points strongly to a close relationship between the gastro-intestinal tract and anemia and suggests that much will be learned in the near future regarding diet and its component substances in the etiology and treatment of pernicious anemia.

Until more is learned regarding the etiology of pernicious anemia and the disease itself prevented by appropriate measures, we will have to deal with cases of this type. And the proper handling of these cases means a great deal more effort on the part of the physician than is generally displayed by him when he gives directions to eat plenty of liver, take two or three bottles of extract a day and come back if they do not feel better. This sort of direction gives a loose understanding between the physician and patient and assures inadequate rather than the adequate treatment so essential in this condition.

For above all else, the treatment for perni-

*Read before the Section on Medicine of the Illinois State Medical Society, May 6, 1931, at East St. Louis.

cious anemia must be adequate. For the physician must know for certain that the patient is taking the full amount of the material prescribed and that he will continue to take enough of the preparation throughout his entire life. This can be in the form of liver, kidney, brain or stomach or the potent preparations obtained from these organs.

The potency of the various preparations vary and it is essential that the prescribing physician realize that brain is only one-third as potent as liver and that the extract derived from one hundred grams of liver is about as potent as sixty-five grams of prepared liver substance. The defatted pig stomach is about 25 per cent. more potent than liver.

In other words, in a true pernicious anemia a remission can be started by the daily use of two to three hundred grams of prepared liver, by the extract from 5 to 600 grams of liver, or from 150 to 250 grams of fresh pig stomach or the defatted extract from this amount.

This remission has as its early sign the prompt, temporary definite increase of the reticulocytes. This elevation persists for about ten days and in the usual case is in inverse relation to the level of the red blood cell count. From the study of a large group of patients it has been possible to construct a curve showing the height of the expected reticulocyte response. With a low blood count, a marked increase in reticulocytes is expected; with a relatively higher count, the rise is less remarkable, and when the count prior to treatment is three million or more, there is no change in the percentage of the reticulocytes.

This situation depends probably on the smaller number of primitive cells in the marrow when the count is high than when it is low. More of these cells are influenced by liver the lower the level of the red blood cells, the liver promoting rapid maturation and release in the circulation of the reticulocytes. The life then of these individual reticulocytes is about four or five days, at which time they mature to full erythrocytes losing their chromophylic staining properties. In full remission the level of these reticulocytes reaches normal in about three weeks.

This method of predicting the rise, knowing the cell count before treatment and using a given amount of the extract, is very accurate and

is the most reliable method of determining the potency of various preparations used in the treatment of pernicious anemia.

Failure in getting a reticulocytic response and a consequent remission may be due to incorrect diagnosis, insufficiently potent material or complications.

The diagnosis is usually simple, for unexplained anemia, the achylia gastrica, glossitis, and the characteristic blood picture and spinal cord changes, all point to pernicious anemia. However, bothriocephalus latus, spure, carcinoma of the stomach and aplastic anemia sometimes closely resemble the disease. The reticulocytic response to known potent material usually easily and quickly establishes the accuracy of the diagnosis.

If there is no response, the diagnosis is certain, and the material known to be potent, the amount should be doubled. Sometimes very large doses are necessary—often due to complications and difficulties with absorption. In very sick patients, huge doses may be necessary and should be placed in the stomach by tube.

Sturgis gave thirty vials at a time and found the same end result as if he had given three vials for ten consecutive days. It appears that the response depends on the total amount of active principle rather than the amount consumed each day. For the active liver principle seems to be utilized in a quantitative fashion, the effect of a given amount lasting a given time.

The percentage of reticulocytes does not appear to be influenced by the presence in the body of an excessive amount of the liver principle, a certain maximum number of cells being possible in any case, this number being related to the original blood level.

However, the rate of this response is definitely accelerated by massive doses. When thirty vials are given at one time the maximum reticulocytic response is in about five days after administration and ends in ten days. This is about twice as fast as the normal response.

Then, too, with this rapid method, there is a more intense stimulation of the hematopoietic tissues of the marrow as indicated by numerous nucleated reds, and immature white cells two or three days after the extract is given. No bad effects have been noted from this method thus far.

Another rapid method is by using a new stand-

ardized fraction prepared by Dr. Cohn. A little of this preparation given intravenously to pernicious anemia patients has produced maximal effects with prompt reticulocytic response. It is seldom necessary, however, to use this new, very potent, preparation. Further researches will probably show definite advantages for its use in the most severe cases.

The dose of potent material should be determined by the red cell count, the hemoglobin, the color index, the character of the cells and especially the patient's signs and symptoms. It should always be remembered that the patient himself must be made to feel well and the amount of liver should not be cut to the amount which just barely keeps up the blood count. For it is a fact that those patients who do the best, are most fit, and never suffer relapses, are the ones who take definitely large amounts of the potent material daily.

Complications are also a factor in determining the dosage. Neurological conditions require probably the largest amounts of the material. For the neuro-muscular symptoms usually do not improve until the blood has reached normal and then may change very slowly. And if the cord changes are pronounced, the improvement is apt to be slow and unsatisfactory.

Then, too, infection, disorders of the liver and other organs can affect the efficiency of the material. Old age and arteriosclerosis require an increased amount, often twice as much as that used for uncomplicated young persons.

A gastro-enteritis can affect the absorption of the potent material and require a considerable increase in the required amount.

The subject of iron in the therapy has always been one for considerable discussion. It is, however, definitely indicated in a few of the types of pernicious anemia, especially those in which there is a persistent low color index after the red cells have returned to practically normal.

A perfect example of this type of case is that of a woman of sixty-five that Dr. Minot saw with me two years ago. She had been brought into a Maine hospital by the Seacoast Mission from an offshore island to die of probable cancer. Study of her blood showed 900,000 rbc and 22 per cent. hemoglobin. The blood picture was typical and she gave the history of having lived entirely on canned beans, potatoes, bread and sea food her

entire life, there being no vegetables, fruit or muscle meat on the island.

Massive doses of extract with an amount of fresh liver each day by tube produced a characteristic response. Her red cells rose rapidly but the hemoglobin remained low. At this stage large amounts of iron were given and there was a consequent definite rise in the color index and a very distinct improvement in the feeling of well being of the patient.

In hemorrhage or chronic blood loss complicating pernicious anemia, iron therapy is indicated and does materially increase the chromatic element of the blood.

Iron, when given at all, should be given in sufficient dosage. It should be given preferably in one of the soluble forms, such as ferric ammonium citrate.

This drug may easily be dissolved in water or milk and can soon be built up to a maximal and adequate dosage of two grams t.i.d.

Besides adequate liver regulation and possibly iron therapy, strict attention must be devoted to the patient's conduct and his diet. He should have moderate regular exercise, long hours in bed at night, freedom from mental worries and a sufficiency of well balanced foods. As in secondary anemias, his food should contain plenty of fruits, fresh green vegetables, muscle meat and sufficient vitamins.

Of the vitamins to be had in abundance, the water-soluble C type is most important. This is the form which is found in fresh fruits, vegetables and to some extent in fresh meats. It seems advisable to use at least small amounts of the unaltered liver when the extract only is used. This on the unproven hypothesis that there is a heat labile enzyme in the fresh preparation which is impaired by the extraction process. This fresh pulp can be given in a cocktail, need not be given more than every other day, and can be given in relatively small amounts.

The problem of decreasing the dosage of potent material is ever present. The authoritative opinion, however, is that it is unwise for any patient with pernicious anemia to take less than two hundred grams of prepared liver daily or the potent material prepared in the form of extract from three hundred grams of liver. The blood may stay up on less than this amount for a considerable time but experience has taught us already that those people presenting symptoms

and who have relapses are those who are trying to take the minimal amount rather than the optimal amount.

There is this general tendency for patients to receive too little of the active principle. To successfully treat these cases, we must be sure that the patient takes a potent preparation and that he swallows enough of it indefinitely each month.

616 E. Capitol Avenue.

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DISCUSSION

DISCUSSION ON PAPERS OF DR. HERNDON AND DR. ARMSTRONG

Dr. S. R. Hoover (Quincy): I hardly have time to discuss two such papers as these in such a short period, and, in addition, Dr. Armstrong has so well covered all the recent material available that it does not leave much to present in the way of discussion.

However, there is just one thing. He mentioned the intravenous use of liver extract. Castle and Taylor of Boston have experimented with this to some extent, and they gave large doses equivalent to 100 grams of liver a day intravenously and got remarkable response, both in the reticulocytes and various other symptoms, including the neurological symptoms. While they don't offer any hope as to this being a cureall, still they think that it should come under consideration for the etiology and the therapeutic results.

One other matter that Dr. Herndon mentioned was

the matter of transfusions. He said that he was glad to see the pendulum swinging back toward transfusion, and I think it is a very good thing. For a while, transfusions fell into disrepute because of the fact that they were given too far apart. They would give one every fourteen days, and there would be from three to five days that the patient would show improvement, and at the end of that time the new elements introduced began to disappear from the blood and before another one was given the patient was back in the same condition. These were large transfusions, from 800 up to 1,000 c.c.'s. If smaller transfusions, say of 350 or 400 c.c.'s were given every three to five days so that there is no time for these new blood elements to disappear from the blood stream, oftentimes remission can be started and be continued by the use of the proper diets.

Dr. J. P. Simonds (Chicago): I would like to suggest that in some of these cases of obscure anemias we might glean some information that would be of value from functional tests of the liver. As Dr. Graham emphasized this afternoon, the liver has so many functions that it is difficult to know whether any one test will give information as to how the liver is performing the particular function in which we are interested. In the normal breakdown of red blood corpuscles, which is constantly going on in the body, the hemoglobin molecule is disintegrated and its iron portion is stored. This has to be built up again into hemoglobin by the new red blood cells which are formed in the bone marrow. Dr. G. H. Whipple has presented evidence that the erythroblasts are not able to synthesize hemoglobin from the disintegration products that are available, that the liver plays a very important part in building up the iron containing a fragment of the hemoglobin part way toward the complete molecule, and that the erythroblasts in the bone marrow can only build up from that point. Hence if the liver function is inadequate in building up the fragments of hemoglobin to the point where the erythroblasts can utilize them, it might be well that the deficient liver function may be an important factor in many of these obscure cases of anemia.

Dr. C. A. Earle (Desplaines): Increased doses of iron seem to be a rather late development, but since that and more recently I have noticed in the literature the use of small doses of copper. I don't know where I saw it nor who said it, but whoever, he was he claimed that it increased the effect of a large dose of iron. I would like to ask the essayist to give his experience with small doses of copper.

Dr. S. E. Munson (Springfield): I think that these two most excellent papers are a fine thing in this section. Particularly they bring to us almost the last word in regard to the diagnosis and treatment of the anemias, which is one of the great problems of the man doing general medicine today.

The particular thing emphasized by Dr. Herndon's paper is that of diagnosis. Secondary anemia is a problem which is so broad and in which so many unfortunate mistakes happen in making a definite diagnosis before treatment is undertaken. There is no

*Paper of Dr. Herndon was printed in October Journal, page 302.

doubt but that the bad results which the average man has who attempts to treat anemia are due to the improper study of his case, improper histories, and a lack of accurate diagnosis

He also mentioned that we cannot discuss the subject of anemias in any way without discussing diet. We are becoming more convinced that the medical diseases which we see may be deficiency diseases. It is probably true that perhaps in early childhood, the child who is brought up on a high carbo-hydrate diet, starting to school, continuing through public school, and even in his college years, is probably anemic during that whole time on account of improper diet, which leads to many of these blood dyscrasias which we find in anemia.

I was talking just the other day before some children in one of the schools. The point I brought out was that the mother frequently comes to the physician and complains that her children are not eating well, and that they do not come home from school with any appetite. As I said to these children, who are probably using suckers or some cheap candy on the way home from school, the high carbohydrate diet in which they indulge lays the foundation early for deficiency diseases from diet.

The thing that is emphasized by Dr. Armstrong is the optimal diet and also the dosage of iron. Two years ago when I was in Boston I left in the hospital at that time a woman suffering from the early cord symptoms of pernicious anemia. She had been walking on two canes and had been almost bedridden. The clinicians I talked with there encouraged me with the cases in which they said they had already used the liver diet and high dosage of iron. I used it in this case afterwards. I just had a letter from her the other day. She is now in Southern California. She told me that her red blood cells were up to 5,000,000. She says that she still has the peculiar sensations in her lower limbs and has reflexes that she can't control, but that she loves her liver just as much as ever. She has always liked liver and has taken large portions of it.

The dosage of iron that was given to me at that time is not what Dr. Minot recommended in his paper read before the American College of Physicians meeting at Baltimore. As both of the essayists mentioned in their papers, where they gave the citrate of iron, particularly the ferric citrate, they are now using more than formerly. Dr. Minot stated that you can definitely see the difference between giving one grain of iron a day and increasing up to seven and one-half grains a day. As mentioned by the essayists, two to five grams a day are now frequently employed until amelioration of symptoms.

Dr. N. S. Davis, III (Chicago): The factor of hypochlorhydria has generally been associated with the primary anemias, but there also seems to be a type of secondary anemia that may be associated with that. I have seen quite a few cases that have responded very well to a dietary limitation and administration of hydrochloric acid, particularly in the form of hydrochloric acid milk. These people seem to be particu-

larly intolerant to meats and chicken, especially those that have been in cold storage. They can eat fresh meats without discomfort.

Dr. Milton G. Bohrod, Decatur: In the discussion of pernicious anemia I think the prophylaxis stressed by the late Dr. Koessler is important. In connection with Dr. Koessler, it is an interesting phenomenon to discover why Minot and Murphy get all the credit for the new treatment of pernicious anemia, especially since Dr. Koessler's report came out in the same number of the American Medical Journal as did Minot and Murphy's. Dr. Koessler's work was based on an experimental study of pernicious anemia-like lesions in rats. Dr. Koessler stressed the fact that in the history of his patients he found peculiar dietary deficiencies, especially with people who did not like meat or with whom meat did not agree. Perhaps a certain constitutional character is necessary for the development of pernicious anemia. Maybe the absence of hydrochloric acid of the stomach is due to that constitutional peculiarity. Certainly you cannot say that the intolerance for meat is due to the achlorhydria, because you can take the same patients and feed them large amounts of liver, kidney and all the rest, and they get well. So there is no actual intolerance of meat. Most of it is, perhaps, psychological.

I think in the discussion of the treatment of pernicious anemia we should stress the prophylaxis, telling the people not to go on meatless diets.

Dr. William D. McNally (Chicago): I should like to ask Dr. Armstrong upon what basis the treatment rests, as the stomach contains a very small amount of iron and other mineral constituents?

Dr. James J. Donahue (East St. Louis): In the light of the beautiful therapeutic results that have been reached in the last few years as outlined by the essayists, our attention may possibly be directed too acutely to medical treatment of anemia, and we may overlook the very important consideration in the treatment of anemia, particularly with children, of the investigation for foci of infection. I think all those who have recently reported any series of cases recommending any treatment, whether it be in the apparent primary anemias of childhood or the more common secondary anemias, have presented very nice results the use of copper with iron has given and they have mentioned the eradication of foci of infection. It would seem that by far and large, most of the anemias of childhood can be accounted for in that way, and, of course, without the eradication it would seem that iron and copper together in any quantity could be of no value without the elimination of toxic agents in the body, particularly in the respiratory tract.

In regard to transfusion, we might heartily agree that it not only is important to use frequently but it is often to be used as a life-saving measure.

Dr. Lowell D. Snorf (Chicago): I am interested, Dr. Armstrong, in the condition of the people on this island that you mentioned. If I understood you correctly, this one person came across from the island who had not eaten but certain very limited foods all her life. What happened to the rest of the people?

Dr. Richard F. Herndon (Springfield):

I wish to thank the members of this section for their interesting discussion. I would like to emphasize one point. When a case is recognized as having secondary anemia we should add to our diagnosis not only the etiologic agent but also the essential mechanism concerned. That is whether the anemia is due to blood loss, diminished blood production or increased blood destruction. If we take the time to do this I believe we will approach the subject of treatment with less empiricism.

In regard to the use of iron I do not believe that it makes much difference in what form it is given as long as it is given in adequate amounts. However, since iron has to be dissolved before it can be used, it seems only logical to give it in a form that is already soluble. Moreover, Minot has shown that a slight increase in the acidity of the upper intestinal tract aids in its assimilation.

The role of copper in the treatment of anemia is still somewhat doubtful. There is some reason to believe that it exerts a synergistic effect with iron. Whether or not this is so I do not know. However, I understand that all the ordinary preparations of iron contain small amounts of copper as an "impurity," but which are, nevertheless, sufficient to meet any theoretical need and so save us the necessary of making further additions.

So far as the amount of blood which should be given at a transfusion is concerned I feel that there are at least two very different situations to be met. In the case of acute blood loss we are trying to replace this loss and restore blood volume. In such cases it is often desirable to give a large amount of blood, as 800 to 1200 cc. In cases of chronic anemia it is probably better to do as Dr. Hoover suggested and give only 400 to 500 cc. of blood at a time and repeat the transfusion as indicated. The reason for this is apparent. We are trying to increase the nutrition and function, not only of the body cells in general, but of the bone marrow in particular. A large transfusion may partially defeat this purpose for, by restoring the circulating blood to a practically normal level, it may temporarily remove the normal physiological stimulus to further blood production.

Dr. W. P. Armstrong, Jr. (Springfield): Just a word about transfusion in the severe cases. Years ago this was the accepted procedure, but since the introduction of extract it is never indicated, even though the count may be down around seven or eight hundred thousand. Instead we use the extract in large doses by tube or at times by the intravenous route. The patients seem to get along better when they are not transfused.

When Bland's pills are used instead of the soluble forms of iron we give them up to 75 grains a day. These pills are made up fresh, however, and are not drug store stock.

There are some clinicians who always give some fresh liver in the form of pulp or cocktail when they are forced to give large doses of the extract. They do this believing that the extraction process destroys an enzyme in the liver which is different from the other

enzymes. When even small amounts of unaltered liver is given with the extract they believe the results much more satisfactory and rapid.

REFINEMENTS IN SURGERY OF THE TONSILS INCLUDING ELECTRO-SURGERY*

FREDERICK B. BALMER, Ph. G., M. S., M. D.

CHICAGO

One may wonder what "refinements" could be offered that would warrant the attention of this specialized group and justify your consideration. The fact that many methods of removal and various instruments have been offered from time immemorial and that none have proven entirely satisfactory is *prima facie* evidence that something is wanting. The physician, as well as the laity, is eager to welcome any procedure that will lessen the hazards and poor post-operative results attendant on the removal of tonsils.

That tonsil surgery has steadily improved cannot be gainsaid, and a skillful operator will obtain almost always satisfactory results. Nevertheless, many operators obtain results that are not always ideal. It is fully appreciated that occasionally there are conditions over which we have no control. It is possible to perform a satisfactory tonsillectomy and at a subsequent time find an abundance of granulation tissue, lymphoid hypertrophy, regenerated or unremoved tonsillar tissue in evidence as well as undue scarring and adhesions. Allowance can be made for such a condition at least as far as the operator's conscience is concerned. The patient will be reasonable enough to understand the conditions if the physician has been prudent and explained the likelihood of such an occurrence at the proper time; namely, before the operation has been performed as well as after the operation should it occur. When the pillars are injured or removed accidentally or large pieces of tonsil tissue are allowed to remain, all of which are avoidable, and without an explanation, it is no wonder that patients are displeased and seek elsewhere for relief. The technique certainly

*Read before the section on Eye, Ear, Nose and Throat of the Illinois State Medical Society, May 6, 1931.

This investigation aided by a grant from the Council on Physical Therapy of the American Medical Association.

has not been adequate when frequent unsatisfactory postoperative results occur.

Limitations and Complications. That tonsillectomy is subject to limitations may be emphasized by considering the report made by Rhoads and Dick¹ in the routine physical examination of nurses entering training at the Presbyterian and Cook County Hospitals, who found the tonsils to have been incompletely removed in 73 per cent and the remaining tissue contained more pathological bacteria than the tonsil in its state prior to removal. Further the conditions did not improve until the recurrent tissue was removed.

The control of bleeding and tonsillar hemorrhage has always been of major concern despite the erroneous, if not amusing, statements to the contrary. It has always been my routine practice to ligate all bleeding vessels with plain dry catgut number 0 or 00. Ligation of vessels regardless of the locations has always been essential to good surgery and it is certainly indicated after an organ has been removed such as the tonsil with the liability of spontaneous bleeding. The surgeon should be able to do it with ease before being confronted with an emergency. It is well known that laryngologists in general have been reticent in conforming to the basic principles of general surgery. Recently a laryngologist made the statement "that he never encountered tonsillar bleeding that required ligation or other drastic methods to control it." Later the facts in the case revealed that the hospital interne had been in constant supervision of this doctor's case for the past twenty-four hours and was still applying local applications hoping to stop it. Another said, "If he could get his patient to vomit he was sure that the bleeding would cease." And they call medicine a science!

Good Operative Position Prerequisite to Extracting Technique and Avoidance of Postoperative Complications. Faulty operative position and a lack of definite, precise technique is responsible for many of the unsatisfactory postoperative results encountered. Local tonsillectomies are usually performed quite satisfactorily, but when it comes to operating under general anesthesia, the operator's reputation is frequently at stake. With the patient on his back, aspirating mucus, blood, and debris, postopera-

tive complications are very prone. Working from above downward with his field of vision obscured and especially if there is any amount of bleeding, it is frequently impossible to do nice work. I believe a first class tonsillectomy is a major operation and requires the utmost



Fig. 1

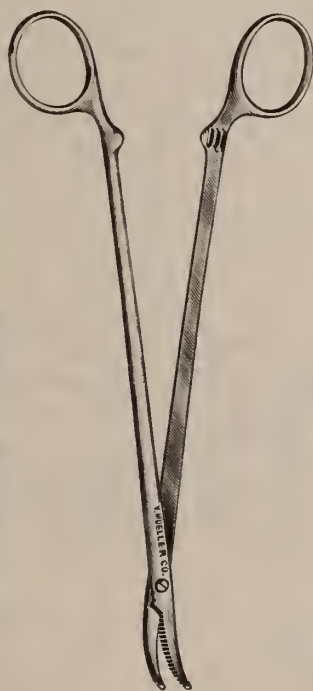


Fig. 2



Fig. 3

Fig. 1. Combination three prong tonsil tenaculum hook and pillar retractor.

Fig. 2. Light-weight hemostat forcep with long, slender handle. The tension of the jaws has been considerably reduced so that undue crushing of the tissues is avoided. Weight, about 20 grams, in contrast to the usual tonsil forcep, which weighs 65 grams or more. Designed to permit the catgut loop to slide down the forcep without interference at the lock. It is seven inches in length and has a curved tip.

Fig. 3. Knot tier. This instrument is provided with a fenestra that may be opened to engage the catgut and closed, thereby preventing the tier from being caught in the tissues while in use. It is especially useful in tonsil surgery and other inaccessible places. It is supplied in various lengths as desired. A shows the tier closed. B, open.

skill and dexterity to obtain uniformly good results.

The following technique is offered by the writer in an effort to avoid complications and control the situation at hand when general anesthesia is employed.

Position of Patient on Operating Table; Operator, Assistant and Anesthetist. (Figs. 1-2-3.) The patient is turned over on his right side, his right arm fixed at right angles to the body to steady and maintain the position, knees flexed, right one above the other, table lowered causing the head to be slightly lower than the body and a small sand bag under the neck. The attention to the arms and legs may be dispensed with if one or two large sand bags are used by rolling the patient over on the side and maintained in position by the bags. This is especially useful in very heavy adults. (Fig. 4.)



Fig. 4

Fig. 4. Relative position of patient, operator, assistant, and anesthetist.

1. Patient on his right side.
 2. Operator, seated on a stool on a level with patient with his
 3. Assistant, and
 4. Anesthetist, also similarly seated.
- Small insert showing positions from above.

The operator is seated on a stool in front of the patient's head with his assistant also seated on a stool to his left and the anesthetist at the head of the table. The mouth gag is inserted and a silk ligature is inserted through the base of the uvula (the muscular portion), using a small curved cutting needle or the author's uvula clip may be used to which a silk ligature is attached. (Fig. 5.) A forceps is attached to the ends of the silk ligature and set aside opposite to side on which the tonsil is being removed until ready for traction to be applied during the dissection of the tonsil which puts the posterior pillar on the stretch and simplifies the dissection materially. The tonsil is grasped with a tenaculum or the author's three pronged

tonsil hook and if necessary a slight rotary traction is made that brings the structures into

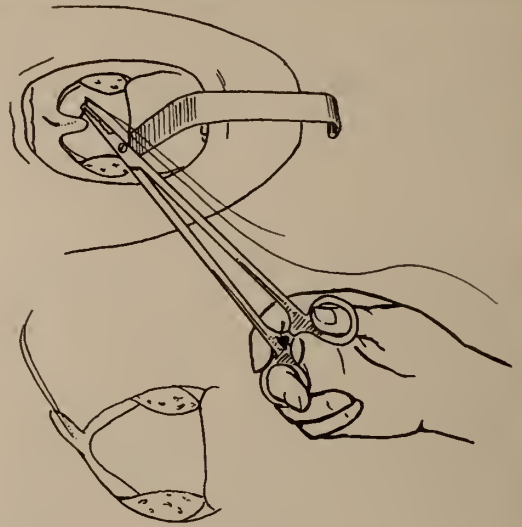


Fig. 5

Fig. 5. Showing silk ligature being passed through the base of the uvula (the upper third or muscular portion), using a small curved cutting needle. Small insert shows ligature inserted and a forceps being attached to the free end ready for traction to be applied during dissection, which puts the posterior pillar on the stretch and simplifies dissection materially. The uvula is held with a thumb forcep or the author's uvula tenaculum while needle is being inserted.

view while traction is made on the uvula. (Fig. 6.) This simplifies the dissection and one can

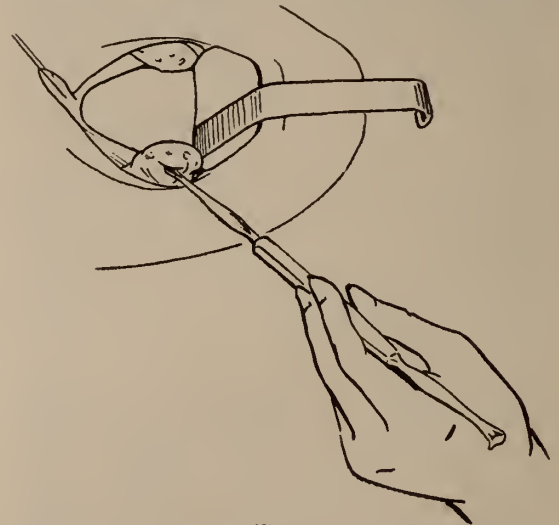


Fig. 6

Fig. 6. Tonsil grasped with author's three prong tenaculum tonsil hook. Tonsil is lifted from its bed and a slight rotary traction is made, bringing landmarks into view while traction is made on the uvula, simplifying the dissection and permitting of the utmost precision.

separate and free the tonsil with precision and where sharp dissection is employed, tearing and cutting of pillars, etc., is avoided. After the tonsil is freed in its entire circumference a blunt dissector may be used if necessary to completely separate the tonsil from its bed (sinus tonsillaris). A thorough appreciation of Fowler and Todd's² article entitled "The Muscular Attachments of the Tonsil" will do much to improve one's ability to completely remove the tonsil, especially that portion so prone to recurrence at the base of the tongue. The tonsil is snared off slowly endeavoring to wipe it off the tongue as it were, completely removing the lingual nodule, maintaining slight traction during the snare process. The snare wire should not be allowed to be drawn through the canula of the snare and pushed out again for use while wire is being inserted, as this angulates the distal end of the snare and usually nicks the tonsil capsule and later a piece of tonsillar tissue will be in evidence.

The patient lying on the side permits of an unobstructed view of the field of operation at all times. Blood and mucus that may appear can be readily withdrawn or allowed to collect in the buccal fossa and removed at our convenience. The tonsillar fossa is inspected by placing the writer's self-retaining clip on the middle of the anterior pillar and a little traction applied if the weight on the silk to which the clip is attached is insufficient, or the assistant may retract the pillar with either end of the combination tonsil hook and pillar retractor (Fig. 1). The fossa, thus widely exposed, is gently

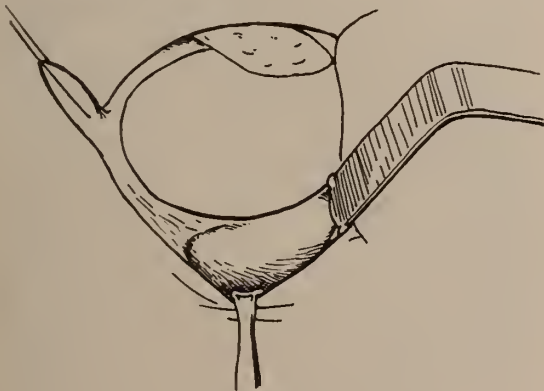


Fig. 7

Fig. 7. Tonsil removed and fossa inspected for vessels to be ligated. With moderate traction on uvula and anterior pillar retracted with patient on the side an unobstructed view is obtained and routine ligation of the vessels easily executed.

swabbed with tonsil sponge holders (Fig. 1) containing a small amount of cotton and the bleeding vessels are grasped with the writer's special tonsil hemostat forcep (Fig. 2). The forcep is especially designed to permit the catgut used in tying the vessels to slide down the forcep without interference at the lock. (Fig. 8.) It weighs approximately 20 grams in contrast to others of 45-60 grams. The tension of the jaws have been regulated to prevent undue crushing of the tissue. Should you endeavor to pick up a spurter and miss it one may leave the forcep in situ and localize the bleeding vessel in relation to the forcep already applied, sponging or aspirating as necessary to obtain a clear view. When one becomes adept at picking up vessels the procedure is almost automatic. A number 0 or 00 dry plain catgut ligature is applied in the following manner: the catgut is brought up from under the forceps (Fig. 8a) and a single knot is tied loosely (Fig. 8b) to permit sliding it down the forcep and over the curved tip. The author's tier is opened and the right strand of catgut is engaged in the fenestra and the instrument closed. (Fig. 8c.) This feature of the tier prevents the tier from being caught in the tissues which has proven very desirable and is thin, thereby avoiding obstructing one's view. (It may be used anywhere in surgery where an extended finger is essential and is supplied in various lengths. It is especially useful also in other inaccessible places such as brain deep abdominal, rectal surgery, etc.) The knot is shoved down the forceps and over the tip and securely tied, keeping the left strand in the left hand and the right strand in the right hand preferably in contact with the corrugated handle of the tier. As the knot diminishes in size (Fig. 8d) the slack is taken up by the thumb and index finger of the left hand. The usual amount of tension is exerted as is customary in tying catgut, using the tier as an extended finger. The forceps is removed and a second knot (Fig. 8e) is tied in a similar fashion and the end of the catgut cut off. The procedure is repeated until all the vessels have been ligated. It is easily accomplished. The procedure is effective and simple and without complications. The use of needles in suture ligation is infinitely more dangerous for obvious reasons and should be used in urgent cases preferably. While com-

plications such as cervical cellulitis, meningitis, etc., are infrequent they have occurred using needles and one is not justified in courting trouble. Further, the vessels are frequently missed, going above, below or straight through the vessel unless mattress sutures are used. The same can be said for the instruments that cut through the tissue and insert the ligature at

mum. Uvula holders that crush the uvula are very unsatisfactory in that they cause a profound edema and discomfort of the uvula for several days and also require the constant attention of an assistant. The uvula clip or suture leaves a single tiny puncture that causes no apparent discomfort and is held by the anesthetist only on special occasions when trac-

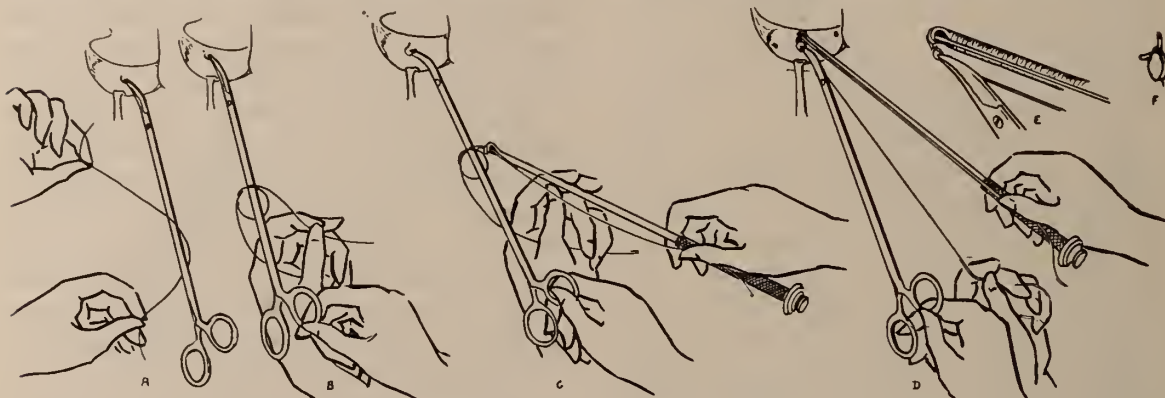


Fig. 8

Fig. 8. Showing the mechanics involved in tying the knot carrying it down over the end of the forcep and ligation of the vessel. Author's tier is opened and the right strand of catgut is engaged in the fenestra and tier is closed. Tier does not become entangled with the suture or tissues.

Fig. 8a. Catgut brought up from under the forceps which has previously clamped a vessel.

Fig. 8b. A single knot is loosely tied and both ends of the catgut are held in the operator's left hand while the forcep is being gently held and steadied by the assistant's right hand and whose left hand is swung around the left side of the patient's face and depresses the tongue, avoiding any obstruction to the view.

Fig. 8c. Knot being sent down the forceps. The tier is opened and the right strand of the catgut engaged and the tier is closed and the loop sent down the forcep.

Fig. 8d. Shows the loop over the end of the forcep and securely tied, keeping the left strand in the left hand and the right one in the right hand, preferably in contact with the corrugated handle. The slack is taken up by the thumb and index finger or the index and middle fingers of the left hand and securely tied.

Fig. 8e. Close up view of ligature around vessel being tied.

Fig. 8f. Close up view of ligature around vessel having been tied.

Uvula traction during removal of adenoid

the same time and they usually start more bleeding than they control.

Advantages of the Procedure. The patient lying on the side permits of an unobstructed view of the field of operation at all times. Blood and mucus that may appear can be readily withdrawn or allowed to collect in the buccal fossa and removed at our convenience. The tonsillar fossa inspected by placing the writer's self-retaining clip in the middle of the anterior pillar and a little traction applied if the weight of the forcep on the silk to which the clip is attached is insufficient, or the assistant may retract the pillar with the tonsil hook. The technique as described has proven satisfactory and permits the operator to control the situation at hand. Complications are reduced to a mini-

tion is needed. It is decidedly advantageous while removing the adenoid making it possible to see and inspect a portion of the post-nasal space tissue on direct vision. (Fig. 9.) The accidental removal of the uvula during the surgical procedure is well nigh impossible. The control of bleeding following adenoid removal is greatly facilitated by direct pressure, the ligature permitting the uvula to be pulled up and forward. The control of bleeding with the standard accepted method of tying with catgut is essential to good surgery. One may also coagulate the vessels by touching the forcep with the coagulating diathermy current, thus controlling bleeding. The latter method is more useful during local operations owing to the danger of explosions due to the general anesthetic.

An exacting technique as offered attendant with good results will do much in remedying the

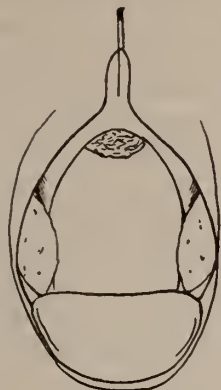


Fig. 9

Fig. 9. Showing author's uvula ligature, facilitating the removal of the adenoid, a portion of which is seen under direct vision. Accidental removal of uvula well nigh impossible and control of bleeding facilitated. Post nasal space may be measured digitally and the proper size adenotome selected and used. It is to be remembered that the patient is on the side and the head of the table is slightly lowered, thereby preventing aspiration of foreign material and permitting of an unobstructed view at all times.

chaotic position the tonsil operation holds today.

General Considerations. The presence of a tonsil is not the indication for its removal! However, I look upon all tonsils with suspicion as our forefathers did the Indians. There is no doubt that many tonsils have been unnecessarily removed. On the other hand, perfectly innocent appearing tonsils have been removed with marked improvement in health clinically. There can be no doubt as to the beneficial affects of a properly removed diseased tonsil.

This being the case, our constant endeavor should be to remove them properly. It is possible for an imbedded portion of unremoved tonsillar tissue, especially when covered over by adhesions and dense scar tissue, to cause as much or more disturbance than the original tonsil prior to its removal. Having endeavored to present what has been to the writer a satisfactory method of removing tonsils, permit me to present a method of tonsillar extirpation by electro-surgery, offered as an adjunct and a valuable newer aid to classical surgery,

ELECTROSURGERY OF THE TONSILS

A very noticeable interest is being manifest by the physician as well as the laity in the electrosurgical removal of the tonsils, no doubt

due to the great amount of publicity given to it of late. My interest in this matter is to present to my colleagues the results of my investigations and observations devoid of speculation and over-enthusiasm.

At present, men of unquestioned reputation and ability have either sanctioned, condemned or are awaiting developments of the procedure. I appreciate the fact that there are those that say surgery is adequate under any and every circumstance, no contraindications either general or local. Also that their patients never refuse surgery and they have no postoperative complications, etc. I have not been so fortunate. I have patients of our own calling and specialty that come from a distance that insist that the electrosurgery be used. It is very essential that the surgeon be the sole judge as to which method is most amenable. He should be therefore equipped accordingly.

General Considerations. The term "electrosurgery" is preferred to avoid confusion, the proper type of current being employed for the conditions at hand. With the apparatus as we find it today the current is very definitely controlled and safe when properly used. A thorough knowledge of the orthodox surgical procedure is essential to the proper and safe employment of electrosurgery. Certainly, the man that does not know what the surgical removal means is not expected to perform the electrical method satisfactorily. Up to the present the results of electrocoagulation that I have seen were not good. Improper technique or the calibre of men (frequently irregular practitioners) or both were responsible.

Several years ago I used negative galvanism for postoperative tonsillar remains and found it impractical, causing protracted pain, swelling, edema, etc., due to the chemical reaction producing sodium hydroxide within the tissues. Fulguration was also employed with fair results, my first attempt being in 1917. The apparatus at that time being more or less uncontrollable and very impractical.

ELECTRICAL CURRENTS EMPLOYED

The agent employed is practically always some form of high frequency current. The various types are as follows:

Electrodesiccation and fulguration—Oudin current, referred to at times as sparking. Both

are desiccating. The desiccating is biterminal and the spark is hotter than fulguration which is monoterminal and does not require a second or inactive electrode.

Electrocoagulation—Surgical diathermy or bipolar endothermy—d'Arsenval current.

Electrocutting—Radio knife or Arc vision current. Fundamental knowledge of the various currents is essential and readily available and not within the scope of this paper.

Therapeutic Use. Electrodesiccation and fulguration may be used where the tonsil is practically all removed, a superficial layer of tissue or follicles, etc., remaining that requires smoothing down. To control superficial bleeding by withdrawing the needle or electrode from the tissues a mm. or two and sparking. Also to prevent adhesions between two surfaces, papillomata, small lymphoid hypertrophies, granulation tissue, fissures, etc.

Electrocoagulation or surgical diathermy is the current employed where deep destruction of tissue is desired about the needle or electrode which is inserted into the tissue or in contact with it and is the current employed in multistage electrocoagulation of tonsils. Heat is produced at the active electrode, which is due to the resistance offered by the tissues themselves to the passage of the current resulting in a dehydration and death of the tissue, the extent of which depends upon the amount of current used and the length of time employed. The resultant affected tissue I like to designate as the "coagulum" rather than the slough or dead tissue, etc. The electrode remains cool in contrast to the ordinary cautery which is hot, exerting the well known superficial action or burn. This current may be used to destroy tissue such as the gradual extirpation of the faucial or lingual tonsils or varix, fungus affections of the tonsils, postoperative tonsillar remains or lymphoid hypertrophies; various benign or malignant tumors; angiomata, nasal polypi, intramural coagulation of the inferior turbinate; coagulation of blood vessels in place of tying with catgut; liberation of adhesions, ciatrices, synechia, atresias, etc. The soft pliable scar following electrocoagulation is very desirable and minimal. The current can be used in preference to the cautery. Electrocoagulation is the current especially concerned with in

this paper, in the multistage removal of tonsils.

Electrocutting of arc incision current has the combined effect of cutting and coagulation, both effects being controlled or modified to suit the individual requirements and conditions at hand. The arc which forms ahead of the electrode at a rapid rate volatilizes the tissue and separates it as though it were done by a knife. This current is especially advantageous to use in very vascular conditions where troublesome bleeding or hemorrhage is liable; in malignancies it offers the advantage of controlling the bleeding and the dissemination of cancerous cells and in infected tissue it minimizes the dissemination of the infection. This current may be used in one-stage tonsillectomies, coagulating the vessels at the same time, or using two separate electrodes, one coagulating and one cutting always in readiness without adjusting the machine. For further details see the writer's article, "Electrosurgery and the Otolaryngologist."³

Indications for Electrocoagulation of the Tonsils. 1. Postoperative tonsillar remains, lymphoid hypertrophy or regenerated tonsillar tissue. It is conceded by those having had experience with electrocoagulation that it is the method par excellence for these conditions. If instead of 73 per cent. of all tonsils showing postoperative tonsillar tissue requiring removal we consider 50 per cent. a conservative estimate, I maintain this condition alone justifies a place in our armamentarium.

2. Lingual hypertrophy and varix.
3. Various fungus affections.
4. Growths and malignancies.

The above are certainly more amenable to electrosurgery and electrocoagulation in particular.

5. Removal of the tonsils in conditions complicated by blood dyscrasias such as hemophilia, severe anemia, etc.

6. Various general conditions accompanied by serious involvement of the heart, lung and kidneys and in the presence of certain diseases such as syphilis, arthritis, and sclerotic changes.

7. The aged and infirm.

8. The many patients that refuse surgical removal.

A considerable amount of material is therefore readily available for electrocoagulation. I would recommend that the ethical practitioners

and especially the otolaryngologist become thoroughly acquainted with the use of electrosurgery and use it in properly indicated conditions. Irregular practitioners will no doubt continue to use the method, but improperly used their efforts will culminate in defeat. They have used other orthodox methods which in time have met a similar fate.

Limitations and Contraindications. Electrosurgery as advocated by the author is a safe, tedious, time consuming, ultra conservative procedure. It requires judgment, technical skill, patience and meticulous care. The multistage

stop precisely at the capsule in one sitting reveals lack of knowledge and insincerity on the part of the operator, and I do not believe it can be done. It is not applicable in children, extremely nervous or refractory patients and where local operations are contraindicated.

Selection and Preparation of Patients. The cases are properly selected. The tonsillar crypts are cleansed with 6 percent. phenol in glycerine and the debris and secretion are removed and 10 per cent. mercurochrome applied to the crypts. This may be done a day or so prior to the first treatment if desired while making ar-



Fig. 10

Fig. 10. Author's universal diathermy electrode holder with electrodes and combination pillar retractor and insulated tongue depressor. Needles of various shapes and sizes are used, according to the type and amount of tissue to be removed. It is to be remem-

bered that the patient is on the side with the head of the table slightly lowered, thereby preventing aspiration of foreign material and permitting of an unobstructed view at all times.

method advocated is the gradual extirpation of the tonsil destroying a portion at one time. Inasmuch as the method is employed where conservatism is of paramount importance, any attempt to destroy the entire tonsil at one sitting or large portions of it, defeats the very purpose for which we are employing the method. This is dangerous, not feasible, impractical. Further, to maintain the current and control to such an extent that it will follow around the various contours and limit itself to such a nicety as to

rangements with the patient. Instruction is given as to the method employed, the possibility of some discomfort, the time necessary, explaining in detail that it is a slow tedious method and that patience and cooperation are essential to success. The necessity to return at stated intervals, depending upon the amount and type of tissue to be removed, usually five or six and maybe a dozen treatments will be necessary. Time spent in doing this at the beginning will avoid "changing horses" in the middle of the

stream. The treatments may be extended over a considerable length of time if more convenient to certain patients. (For more complete details see author's article, "Evaluation of Electrosurgery of the Tonsils.")⁴

Technique. The tonsil is swabbed with 1:1000 adrenaline solution to dehydrate the tissues. The surface of the tonsil and the interior of the

three seconds a blanched area will appear around the needle. The foot switch is released and the needle is removed. This process is repeated as many times as is necessary, usually six to ten contacts, depending upon the amount of tissue to be removed. A small area of unblanched tissue which is left between the punctures allows the coagulated areas to coalesce and pre-



Fig. 11

Fig. 11. Author's combination tongue depressor and pillar retractor—straight handle (metal). May be used

on either side, permitting the tongue to be depressed and pillars retracted at the same time.

crypts are swabbed with cocaine hydrochloride using a fine aluminum applicator tipped with cotton and moistened with 1:6000 adrenalin solution and the excess of moisture squeezed out. An infinitesimal amount of cocaine is picked up on the applicator without causing the flakes to go into solution by excess of water. This is repeated 2 or 3 times at two or three minute intervals which is usually sufficient. The apparatus is in readiness, electrocoagulation current employed, the reading on the meter being about 3,000 milliamperes with the spark gaps slightly open. This will give approximately a reading of 250-300 milliamperes with the patient in the circuit. Amount of current can be varied with conditions at hand. To the active electrode the appropriate needle is attached. The indifferent electrode is connected to the metal chair or the foil on which the patient is seated. The writer has developed a series of seven needles and a universal holder or handle and a combination pillar retractor and tongue depressor. (Fig. 10.) The holder will accommodate needles of various lengths and calibres which are held securely. The tongue depressor can be had in non-conductive and conductive material. (Fig. 11-12.)

The proper needle is selected for the type of tissue to be coagulated and inserted into the tonsil substance approximately four millimeters, depending upon the amount of tissue to be removed staying about four or five mm. away from the peripheral structures and avoiding sparking and surface fulguration, keeping the point toward the center of the fossa. (Fig. 13.) The foot switch is turned on, and in one to

vents over-coagulation and the possibility of too early separation of the coagulum, thereby avoid-



Fig. 12

Fig. 12. Combination tongue depressor and pillar retractor with curved handle (metal). May be used on either side, permitting the tongue to be depressed and pillars retracted at the same time.

ing unpleasant complications. The amount of destruction following a moderate coagulation will surprise the beginner when the coagulum has cleared. The utmost precision is essential. The first trial should be very moderate to observe the reaction of the tissues as a guide to further treatment. (Fig. 14.) Should a bleeding point be encountered it may be readily controlled by sparking the area, withdrawing the electrode away from the tissue one or two millimeter. One may begin at the supra-tonsillar fossa area if desired where toxic absorption is probably most active. It is better to begin in an area around the middle of the tonsil if there is any likelihood of the patient wishing to resort to surgery after a treatment or two, which elimi-

nates interfering with the surgical dissection should it be necessary. Subsequent treatments

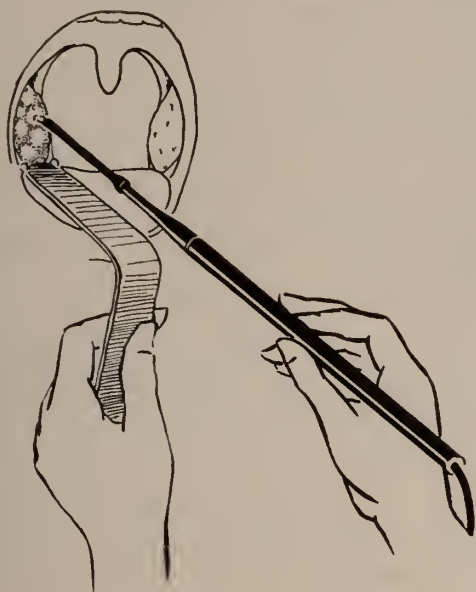


Fig. 13

Fig. 13. Schematic representation showing insertion of needle electrode and typical reaction with small area of normal tissue between coagulated areas. Combination tongue depressor and pillar retractor is shown.

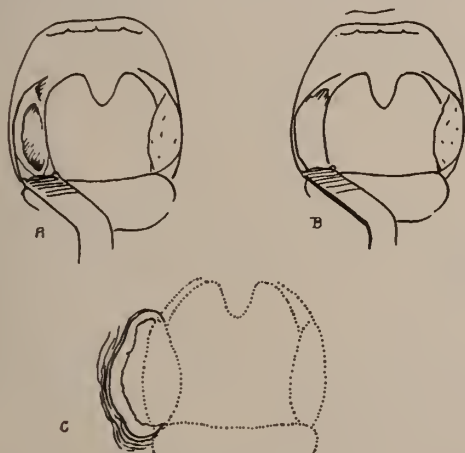


Fig. 14

Fig. 14. Schematic representation showing:
A. Amount of tonsillar extirpation after first treatment.

B. Apparent complete removal of tonsil after several applications, plica-triangularis removed and pillars undamaged.

C. Same tonsil above (b) with full retraction of anterior pillar showing small amount of tonsillar fundus remaining to be removed.

to the same tonsil can be given in ten days as it takes this long for the coagulum to clear. One may hurry the amount of tissue coagulated at a sitting but the intervals between treatments

cannot be shortened. The other tonsil may be treated in four or five days after the first one. Topical anesthesia is employed purposely and there is likelihood of some discomfort and pain. Statements to the contrary reveal insincerity. The amount of pain however is usually negligible and varies with the individual. Infiltration anesthesia is purposely avoided because it dissipates the current and renders it uncontrollable. The water logging of the tissues necessitates the drying out of the tissues during the procedure and an undesirable reaction follows such as swelling, edema, pain, etc. Occasionally nerve block is resorted to when nearing the capsule during the final treatments, but generally tabooed for reasons previously stated. "Vocal" or "oral" anesthesia has its place. However, the time being from one to three seconds during each coagulated area the discomfort is only momentary. I have used sphenopalatine anesthesia in my private cases with abundant satisfaction, a report of which will appear in the literature shortly. The time required to obtain anesthesia is a disturbing factor and usually necessitates one especially trained to employ it.

Complications possible. It is possible to have discomfort, secondary hemorrhages, infection, incomplete removal of the tonsils just as with any other means of tonsil removal, and especially if the same painstaking care is not adhered to as is usual with good surgery, and improper technique is employed. The writer has had practically no disturbance with complication, no doubt due to the conservative method employed. There are tonsils that are unsuited for electrocoagulation and this phase of the procedure will be considered thoroughly at a later date.

Electrocoagulation does not replace surgical tonsillectomy. Electrocoagulation is not offered to replace surgery in the removal of tonsils. The average tonsil can be removed rapidly and cleanly with little or no inconvenience to the patient or surgeon, especially if the cases are properly selected and the proper attention given before, during and after the operation. The risk to the patient is practically nil with a good operator. How ridiculous it would be to subject the average patient to the slow, tedious, time-consuming method when the tonsils could be slipped out in a few minutes under local. Economically there is no advantage to be offered in the average case. Postoperative tonsillar re-

mains, very sessile tonsils, markedly atrophied tonsils that can be easily manipulated are satisfactory cases for electrocoagulation. Should a portion of the tonsil show up after removing it surgically it is a very simple matter to remedy it with electrocoagulation. No method is ideal, but the combination of surgery and electrosurgery is a means of approaching the ideal. Surgery will continue to be the method of choice and where it is contraindicated electrosurgery may be considered as an appropriate and scientific aid to classical surgery. The surgeon should be equipped, therefore, to use the method best suited for the conditions at hand and not to be limited by lack of ability, knowledge, nor equipment.

Diathermocryptectomy. (Fig. 15.) I have always maintained that nothing short of the total



Fig. 15

Fig. 15. Author's Diathermocryptectomy.

A. Broken line showing cryptic bearing area to be removed by coagulation. Dotted line showing outline of anterior pillar, uvula and base of tongue.

B. Same tonsil (a) after removal of cryptic portion.

removal of the tonsils should be considered when the tonsil is diseased and the surgical removal attempted. My reason for this is that incompletely removed tonsillar tissue following the surgical removal usually becomes scarred over with cicatricial contraction and anatomical distortion. The physiological function is greatly interfered with and the possibility of continuation of a potent focus of infection. The same conditions are not at hand when diathermy is employed. The contraction and scarring following the latter method is infinitesimal with apparently no distortion in glandular tissue. The crypts can be followed down to their normal termination. It is usually a simple matter to remove the cryptic bearing area of the tonsil down to the fundus of the tonsil. I have had many patients, some of whom had very hazardous conditions, who refused anything more than removal of the cryptic portion. The results were ideal. No trauma to adjacent structure need ever occur.

In view of the fact that 75 percent. of all surgical tonsils are and have been incompletely removed, I believe the removal of the cryptic portion is a justifiable and worth while procedure in certain hazardous conditions. It can be done usually with little discomfort or inconvenience. The time element is negligible. I have termed this procedure "Diathermocryptectomy," a descriptive name, namely, the removal of the cryptic portion of the tonsil by diathermy current.

Every vestige of tonsillar tissue can be removed which requires infinitely more time, care and experience. The above is a simple procedure and certainly more reasonable than a badly mutilated throat following a poorly executed surgical tonsillectomy. It has been repeatedly brought to my attention that most patients experience a decided relief from the toxic absorption as evidenced in their general improvement in health after two or three treatments of coagulation. This is no doubt due to the sterilizing effect of the tissues in addition to removal of a certain amount of the cryptic area and cessation of toxic absorption accordingly. Further, the sterilized tonsillar tissue remaining in situ with its bacterial flora probably acts similarly to that of an autogenous vaccine causing a defense reaction to ensue.

CONCLUSIONS

1. The control of tonsillar bleeding in accordance with the basic principles of general surgery is very essential in the removal of tonsils.
2. Faulty operative position and lack of definite precise technique is greatly responsible for the majority of unsatisfactory postoperative results in tonsillectomy.
3. A technique is offered that enables the operator to control the situation at hand.
4. All tonsils are suspicious, especially in adults.
5. There can be no doubt as to the beneficial results attendant on the proper removal of diseased tonsils.
6. Electrosurgery and electrocoagulation in particular do not replace surgery in the removal of tonsils. It is better suited to certain selected cases.
7. No method of tonsil removal is ideal. The combination of surgery and electrosurgery is a means of approaching the ideal. Surgery will

continue to be the method of choice, and where it is contraindicated, electrosurgery may be considered as an appropriate and scientific aid to classical surgery.

8. The surgeon should be equipped to use the method best suited for the conditions at hand and not be limited by lack of ability, knowledge, nor equipment.

9. Diathermocoagulation or removal of the cryptic portion of the tonsil is a commendable, worthwhile, simple procedure to be considered under circumstances where a conservative procedure is indicated or necessary.

10. Electrocoagulation is a safe, tedious, time consuming, ultraconservative procedure requiring judgment, technical skill, patience and meticulous care.

185 North Wabash Avenue.

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HEART LESIONS CAUSED BY CHEST INJURIES*

FRED M. F. MEIXNER, M. D., F. A. C. P.

PEORIA, ILL.

The medico-legal phases of the problem of cardiovascular effects produced by direct or indirect violence from without often cause considerable difficulty to be placed in the path of the compensation boards and medical men concerned in a case and the clinical effects may be so out of proportion to the anatomical changes that a discussion and practical consideration of a few of these cases will be profitable as an aid in estimating the ensuing disability and compensation liability.¹

There is often difficulty in deciding whether indirect injury to the thorax is able to induce temporary or permanent damage to the heart and doubt must frequently be registered as to whether a cardiac irregularity or cardiac pain, or other symptom or symptoms of myocardial involvement are due to a specific injury in the course of employment, or an aggravation of a

pre-existing cardiac condition. The question is also often raised as to whether the injury or strain superimposed on a damaged heart produces the effect of which the patient complains.² The law does not hold that an employer is free from responsibility even though the heart was impaired previously. This paper will cover some of the more common symptoms and pathological cardiac complexes that occur in chest injuries and by no means is intended to cover all of them comprehensively.

The heart and pericardium lying in the chest in close relation to the cartilages and directly behind the sternum subjects it very readily to crushing injuries or an external force producing contusion or concussion and no doubt the same pathological and neurological changes can occur in the heart as in corresponding injuries to the lungs, liver, kidneys or spleen. Several factors may enter into the character of the lesion produced, such as the status of the heart cycle, the resistance and resilience of the chest wall, and the character and direction of the force causing the injury.

Kahn classifies the principal types of heart lesions that occur in consequence of direct and indirect violence as follows:

I. Direct injuries:

A. Contusion and concussion of the thorax.

1. Injury to the pericardium.
2. Auricular fibrillation.
3. Extrasystolic arrhythmia.
4. Heart block.
5. Injuries to the valves of the heart.
6. Injury to the aorta.
7. Injury to the heart musculature.
8. Rupture of the heart.
9. Miscellaneous types.

B. Penetrating wounds:

1. Fatal.
2. With recovery and post-traumatic effects.

II. Indirect injuries:

A. From without, such as falls with no direct injury to the chest.

B. Heart strain.

These accidents may occur from mine falls, slate falls, tripping and falling on the chest, contra coup by a fall from a height, being run over by a car or being caught between two cars, or a car and a post or building.

A severe blow on the chest or a severe fall on some object may contuse the precordial tissues and even the parietal pericardium and may be mild with complete recovery in a few days. In some cases it may last for several days and produce severe incapacity and permanent pain and

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distress. Some of the symptoms in these cases may be due to the displacement of the heart and mediastinum and consequent arrhythmias, recurrent dyspnea, palpitation and pain after exertion. These cases are especially difficult to evaluate in a legal case as the symptoms may be out of all proportion to the extent of the original injury.

In contusion of the chest the injury is much more severe and the acute symptoms of shock with paleness, weak thready pulse and shallow respiration may be present. Blows near the heart are more serious than in other parts of the chest and boxers know that a blow over the heart may mean a knockout. In severe cases, associated with shock the prognosis may be grave.

Pericarditis. Acute fibrinous pericarditis, with or without effusion, often occurs after pericardial injury, such as a sudden fall, striking an object or the edge of the steering wheel of a car. Usually several hours after the accident the patient complains of severe pain in the chest, dyspnea and a slight rise in temperature. With the history and the subsequent clinical course these cases usually offer no difficulty in diagnosis.

The recovery may take place without adhesions, or the dyspnea, palpitation and tenderness may persist or even be permanent. Mrs. P., aged 42, was caught between her car and the garage door, crushing the chest mildly, causing her to sit on the running board for several minutes before she could get her breath. She then drove downtown and went to the theatre. Six hours later she became dyspneic, the pain increased post-sternally, her heart palpitated and in ten hours the pain was so severe as to require morphia. Pulse was regular but weak, temperature 99.2. Heat was applied over the precardium. Two days later the pain was less severe but on percussion a typical pear-shaped area was found and a diagnosis of pericarditis with effusion was made. Aspiration yielded 300 cc. of clear fluid and the patient made an uneventful recovery.

Cardiac Pain. Whenever there is a severe injury to the precordium, myocardial damage cannot be ignored as a possibility, and if ribs are fractured or a penetrating wound has occurred, the suspicion is even more pronounced. When violence is followed by cardiac irregularity and pain, injury to the myocardium must be looked for carefully. The pain has no particular characteristics but may radiate to the axilla or lower left chest. The heart tones may be deficient in

muscular quality with lessened heart sounds and a persistent rapid heart without fever is significant, as are an irregular or variable pulse. The cardiac pain may be severe and acute, lasting only a short time and gradually disappearing or it may be mild and persistent. Pathologically the pain may be due to adhesive pericarditis, as shown above, or may be due to definite changes in the heart muscle and coronary arteries as a result of the injury. Sutton and Lueth³ show by experimental work that cardiac pain may result from insufficient nutrition to the heart muscle, probably due to an insufficient flow of blood through the coronary arteries. It may also be due to a sclerotic narrowing of the lumen and so much less exertion may result in sufficient interference with the blood flow to cause pain. In some cases the sclerosis is not sufficient to account for the pain, and in these cases the phenomenon of pain may not be obstructive but rather due to a spasm of the coronaries, although sclerosis of the smaller vessels has not been excluded. This may account for the persistent pains that occur after a blow or severe contusion over the chest. Lack of response by the coronaries to increased exertion by dilating and allowing increased blood flow may explain why dilator drugs relieve the pain in some of these cases. Temporary occlusion of the coronaries has caused temporary or intermittent pain, as was shown by dog experimental work and the pain is transient, as differentiated from the continued pain of coronary thrombosis. This transient or temporary spasm of the coronaries may follow a trauma of the chest due to the effect on the innervation of the coronaries. Mr. L., miner, aged 55, with no previous history of cardiac trouble, fell by tripping on a wire in the mine in such a way that his dinner bucket was under his chest. He had severe pain over the precordium and "his wind was knocked out." He continued to work but was weak and short of breath. Pain, mild in character, persisted for several weeks. Examination made two months later on account of persistence of pain and dyspnea, showed a marked irregularity of the pulse, with dyspnea and weak, muffled heart sounds. No murmur present. Exercise tests showed that the myocardium was weak. There were no symptoms or signs of pericarditis. The heart showed a moderate dilatation to the left, apex beat not visible or distinctly palpable, rate 68, no change in second aortic. Blood

pressure 134/76. Electrocardiogram showed a cardiac irregularity, left ventricular preponderance, inversion of T. wave slurring of Q R S wave and sinus arrhythmia. The patient developed fibrillation in two months which caused increased pain and dyspnea. On treatment with benzyl-benzoate and nitrites his symptoms became less and he was able to do light work. Diathermy over his cardiac area will control the fibrillation, increases the pulse rate, and lessens the pain, but digitalis has no effect on his condition. A diagnosis of acute coronary insult followed by myocarditis and possible coronary spasm was made.

Fibrillation. Fibrillation has already been alluded to above and often occurs in an injury to a previously damaged heart,⁴ but whether it can occur in a previously normal heart is still in dispute. However, it occurs after chest injuries and aside from its medicolegal aspects, demands attention. The pathological changes that underlie this phenomenon also cannot be stated with any degree of positiveness. Kahn suggests the possibility of a subpericardial ecchymosis in the auricular muscle. Dyspnea, palpitation, precordial pain and a persistent cough are symptoms. Once established the recurrence or permanence of the fibrillation is likely. The possibility of rheumatism, syphilis, arteriosclerosis, toxic goiter or other toxic conditions must be ruled out before it can be definitely attributed to the injury. The history previous to the injury is very important in differentiation. Myocardial failure due to the increased output of the heart is often a consequence of fibrillation and must be borne in mind in estimating the damage to be assessed under the compensation laws.

Arrhythmias. Extrasystolic arrhythmia usually follows focal myocardial irritation due to small pathological areas in the heart muscle or to coronary changes. This is characterized by premature beats that interrupt the normal heart rhythm. Cardiac strain, blows to chest or falling cause this phenomenon. Excluding any other cause for this condition, one must consider the relation of cause and effect. As possible factors toxic or infectious conditions, arteriosclerosis and neurological influences must be eliminated. Here again, as in fibrillation, the clinical relationship between the accident and the onset of the irregularity is the deciding factor. The symptoms are

usually described as a "jump in the heart," a "flopping heart" or a "sudden turning over." There may be a dizzy spell, a choking sensation, or a definite dyspneic distress, or even momentary pain. The locus of origin may be determined by the electrocardiograph. The condition may be mild, with recurrences over years, or may be severe and lead to total disability and incapacity. The possibility of myocardial changes getting progressively worse must aid in the prognosis.

Miss H., aged 31, saleslady, fell over a bundle of hardware and pulled a roll of linoleum down on her chest. Previous history negative. Had never had any heart condition and had been repeatedly examined for insurance. Two days were spent in bed due to the pain in the chest on moving. Three weeks after the injury she noticed a slight sharp pain several times a day over the cardiac apex but no irregularity. She was examined two months after the injury and many premature beats were present, some coming singly, some in pairs. Six months after the injury she showed a dilated heart to the left, swelling of the feet, weak heart tones, frequent extrasystoles and electrocardiogram negative except for the irregularity and inversion of the T. wave. On rest and digitalis the patient has improved but is at present unable to work. This illustrates one of the borderline cases where the cause and effect are extremely hard to relate and yet the evidence is so presumptive in favor of the relationship as to make it likely.

Heart Block. Being usually an end phase of any form of cardiac pathology it will not be necessary to more than mention this condition. However Rosenon⁴ reports a case of temporary acute heart block following a blow over the precordium in a boy of ten years.

Valvular Lesions and Heart Rupture. These both follow severe injuries to the chest and are comparatively rare and may or may not presuppose a previously unhealthy heart, or may be due to peculiar conditions present during the accident or the character of the blow or pressure. Compression of the chest in deep inspiration may rupture the aorta or aortic valve or a fully distended ventricle sustaining a crushing blow may tear a valve or several valves may be injured simultaneously. When sudden death does not intervene, the recovery may be long and tedious due

to the ecchymosis present and the liability of aortic atheromata and scars developing.

The symptoms and signs are those of sudden intense cardiac insult followed by the characteristic signs of the region affected. In ruptures of the mitral valve, valvular sclerosis may ensue with its characteristic signs, due to scar formation and distortion in the valve. Allbutt⁶ cites such a case following the kick of a horse over the precordium. The prognosis must be guarded and recovery may be slow and incomplete. Those cases having a history of pre-existing valvular lesion give a better prognosis, bearing in mind the incapacity based on the previous lesion before the injury. In aortic injuries aneurysm is common, both in the descending, ascending and abdominal portions. In aortic lesions syphilis must be definitely excluded as a predisposing cause. Aggravation by trauma of a pre-existing aortic lesion may be the basis for a legal award. Rupture of a pre-existing aneurysm may occur. In cardiac rupture and stab wounds of the heart prompt surgical intervention may save the life of the patient. It is amazing at times the extensive injury that the myocardium can withstand with recovery and few clinical signs afterward manifest themselves. This type of injury is nearly always due to bullet or stab wounds but spontaneous rupture can occur as a result of violent injury, is usually fatal in a short time and is due to intrapericardial pressure inhibiting the action of the right auricle. Incomplete rupture may occur with subsequent healing and myocardial scars, which produce the same train of symptoms as mentioned under "Cardiac Pain" and the same prognosis. Delayed rupture with death is also a matter of record. Morgagni's rule holds good, however, that a complete rupture never occurs through the sound heart muscle.

Prognosis. The prognosis in cardiovascular lesions following injury depends on the degree of disturbance of circulation produced by the defect. If the first shock is well born, then the prognosis depends on the size of the defect, the condition of the myocardium and coronary vessels, and the degree of healing and recuperation present in the injured part. At times the cardiac activity is undisturbed for a short period of time and later sclerosing and atrophic changes, adhesions or vascular changes may produce disabling symptoms and functional lesions. The possibility of cardiac insufficiency and failure ensuing in the

future must be kept in mind in formulating the prognosis.

Legal Conclusion. The following facts must be borne in mind when considering the disability from a compensation standpoint:

1. The heart trouble may have been present before the accident and was not influenced by it.
2. The accident had only a transient effect and subsequent permanent developments of a cardiac nature may postdate the injury.
3. Heart trouble previously present may have been aggravated or exaggerated by the accident. We may assume that if a man was able to do his normal work, then suffered an injury to the chest followed by a cardiovascular incapacitating lesion, the lesion must be considered the result of the aggravation of a previously symptomatic or non-incapacitating lesion.
4. Cardiovascular lesions following within a reasonable time injuries to the chest, excluding any other reasonable cause for the lesion, may be assumed to be the result of damage to a previously normal heart.
5. The time between the accident and the symptoms causing the disability is usually short. The longer the time between the accident and the onset of the disabling lesion the less likelihood is there that the causal or aggravated lesion is the result of the injury. In other words, the relationship between the two must be clearly established. Reappearance of symptoms and signs of recurrence should be attributed to the original injury or lesion.
6. Even in severe alterations in the heart the findings by physical examination and observation may be slight and a severe injury to the heart may result from accidents that leave no trace of injury to the chest.
7. Traumatic cardiac neuroses do not enter into consideration in this paper, since the discussion is limited to actual physical injuries.

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827 Peoria Life Bldg.

DISCUSSION

Dr. Walter S. Priest (Chicago): I would like to

ask Dr. Meixner if he has used quinidine in attempting to control these irregularities?

Dr. N. S. Davis III (Chicago): I have seen a few cases of indirect trauma to the heart, perhaps with contusions of the chest wall. In one case it seems quite evident that there was a direct cause and relationship. A man playing handball, when going after a ball, crashed into a wall and almost immediately afterwards had collapse and symptoms very similar to those found in coronary occlusion. He had a fibrillation for a while and has been rather completely disabled since.

Then there is another type of case that was mentioned at the close of the address, where a man has a contusion to the chest wall, an older man particularly, and then three or four days later develops symptoms of cardiac trouble, which it is quite evident is due to a coronary occlusion. It is very difficult to prove definitely a relationship between the trauma and the heart lesion. Those are cases that must be considered from a medical-legal viewpoint.

We had one in the hospital this winter. A watchman was chasing someone and had a contusion of the chest wall. He was all right for two or three days and then commenced to have symptoms of coronary disease. He was brought into the hospital and we made a diagnosis of coronary occlusion and said that it was questionable, because of the time interval, as to there being any connection with the trauma. He was afterwards removed to another hospital and died. There was a postmortem which proved coronary occlusion. The question now comes up whether the trauma had any association. There was an interval of three or four days between the trauma and the development of the heart symptoms.

Dr. Charles R. Wiley (Chicago): I think the doctor is to be congratulated for bringing forward this subject, because undoubtedly it is a factor in heart disease. This case that Dr. Davis has just referred to was transferred from the Alexian Brothers Hospital to the Norwegian-American Hospital. I had the opportunity to see this old gentleman and quite definitely, from the history, the symptoms began with the traumatic insult. Of course, because of his age there was a diffuse and a generalized arteriosclerosis. However, at necropsy there was a thrombus high up in the left coronary, but no visible evidence of trauma in the precordium, or of damage to the ribs or to the adjacent structures. The time elapsed from the trauma to his arrival at the second hospital was such that if there were any superficial marks from the blows, they would have disappeared.

The possibilities that the Doctor brought forward must be thought about, and as Doctor Davis suggests they are mighty hard to prove. Insurance claim has been made in relation to this old gentleman's death. I am wondering now how those of us who are interested in the case are going to attempt to prove traumatic relationship. Necropsy disclosed a general arteriosclerosis and all the picture that goes with that disease.

Dr. E. E. Davis (Avon, Illinois): I am very much

interested in this paper and especially so because of a case that I had very recently, a man fifty-eight years old. He developed some shortness of breath and some cardiac trouble, but as he was a laboring man had worked right along all the time. In April he had a slight fall in which he jumped from a ladder, lighting first upon his feet and then falling upon his buttock. He was knocked out of breath and for a few minutes was very short of breath. He got up and went about trimming the limbs off the tree from which he had fallen. He was apparently getting better, but the man for whom he worked took him home in an automobile. He stayed in the house for an entire week. I saw the man only once, just a few days after he was incapacitated, and I found his heart was not good. One week later he died very suddenly of what I diagnosed as a coronary thrombosis. I just wonder what relation there might be to the trauma of the fall and the oncoming coronary thrombosis.

Dr. S. E. Munson (Springfield, Ill.): I think this is a very timely paper by the Doctor, because so infrequently does one hear the subject of heart disease discussed from the standpoint of trauma. In any symposium on heart disease I know it is not often that one has the opportunity to hear a paper on injuries to the heart by direct violence. There isn't any question about the frequency of these accidents. I think the important thing to stress is the lateness of the time between the accident, which the Doctor mentioned in his cases, and the symptoms which came afterwards. That would be a matter that even the good clinician may overlook.

Probably some of us have had an opportunity to see cases of this character sometimes without making a diagnosis on account of the lateness of the trouble. Almost all of us have known that trauma may cause serious conditions of the heart. I recall seeing a case myself where a man had had a blow. This was in a heart case where there was a rupture of the mitral valve. The changes in the heart made this diagnosis positive beyond any chance of the possibility of anything else having caused it.

I think that the Doctor is to be commended on presenting this paper, and particularly on the character of the cases which he has had.

Dr. Fred M. F. Meixner, Peoria (closing discussion): I will answer the last question first. As I mentioned in the paper, the coronaries are very frequently affected in sudden exertions or in sudden falls. If there should happen to be a lesion making those coronaries susceptible to rupture, of course you would get a coronary thrombosis owing to a rupture of the intima, and you would get a history of coronary thrombosis. On the other hand, you may have had an aneurysm of the ventricle, with subsequent rupture, or a pericarditis, with subsequent rupture of the auricle.

I have used quinidine. In some cases you get an effect and in some cases you don't. The question of what causes these irregularities, I think, is the key to what you can use. When the irregularity is due to a ventricular proposition—that is, a myocarditis, a developing of an injury to the small coronary vessels

with later scar formation—then, of course, you have a definite pathological process.

Wharton and Clausen say there are even acute hemorrhages occurring in the myocardium which produce scars and cause irregularity. If you get an irregularity due to scar formation, I don't believe that quinidine will do as much good as dilators. If dilators upset the patient, then the use of theocalcium or any of the other theobromine derivatives will give better results perhaps than quinidine. On the other hand, if you get an auricular-ventricular syndrome, with irregularity and fibrillation, then I think quinidine gives a little better results.

Dr. Davis brought up the question of myocarditis in this case, and that opens up that big field of nitrites and muscular response. There has been a great deal of work, as I mentioned, done by Burgess and by Sutton and Lueth at Northwestern, and other men are working on the problem of correct treatment. Sutton, in a recent issue of the *Journal A. M. A.*, wrote an article on "Treatment with Digitalis," not in the ordinary therapeutic sense, with digitalization, but in small continued doses of one, two or three grains, over a long time, giving a supporting action to the myocardium, which will bring some of the cases around, especially those with diffuse myocarditis, which would not be the case with any other therapy.

Arsenicals and potassium-iodide, especially in the case of syphilis, are used; but the main treatment is the one that we have always had for chronic heart lesions of any kind—that is, rest, fresh air, good food, and at times a change of climate. Some of these patients do better when going to a warm climate in the winter, while other patients do better when leaving a warm climate and coming into the invigorating air of the North. That is the thing that has to be thought out in each case.

On the question of heart neuroses occurring in these injuries, that was not in the phase of the paper and therefore was not discussed. It is a fact that you do get neurosis associated with actual traumatic injuries. You have to use bromides—nerve sedatives—and other therapeutic methods to overcome the neurotic condition.

IMMUNE SERUM FOR THE TREATMENT OF POLIOMYELITIS*

H. A. ORVIS, M. D.

WINNETKA, ILL.

In the past we have all, I think, received reports of poliomyelitis with dread. We have felt sure it was an acute infectious disease that was communicable, yet few contacts developed the disease and quarantine regulations have had little effect that could be demonstrated.

We have some where in the country each year

areas where poliomyelitis is epidemic. Massachusetts and California had high incidence this last summer. In Europe, Alsace, Belgium and Holland reported epidemics. In Illinois we had 88 cases in 1929 and 410 in 1930. So far this year we have had 44 cases as against 17 last year. We are showing an increased incidence and one that has held over into fall and winter months. This suggests that we had best be prepared for more cases the coming summer and fall. There has been a vast amount of research in poliomyelitis and some of the more recent work is especially interesting and valuable.

Aycock and Kramer have shown by neutralization tests on sera of 75 normal individuals, without history of poliomyelitis, that half of them neutralized the virus of poliomyelitis. This we might conclude indicated that half of this group was immune. Classifying them into urban and rural groups we again get an interesting observation. The urban group of 46 contained 32 or 69.6 per cent. which neutralized the virus while 14 or 30.4 per cent. failed. The rural group of 29 contained 6 or 20.7 per cent which neutralized the virus and 23 or 79.3 per cent. who failed. No immune sera was found in the rural group below ten years of age, while in the urban group many children below this age showed immunity (*Journal of Preventive Medicine* 4: 177-259, May, 1930).

Shaughnessy, Harmon and Gordon report serum of normal infants six months to two years seems almost devoid of neutralizing properties. They also show that many normal contacts of poliomyelitis have sera with high neutralizing properties against poliomyelitis virus as well as many normal adults who have not had contact with poliomyelitis. (*Journal of Preventive Medicine*, Vol. 4, p. 472.)

This would lead us to believe that a large percentage of our population is immune to poliomyelitis. That this percentage starts from zero at two years of age and increases up into adult life. Also that the percentages are greater in the city in various age groups than in country. Aycock suggests in discussing the epidemiology of poliomyelitis that at times a community may possess a virus reservoir which is the throats of a large number of people who harbor the virus for a relatively short time during which by far the greatest proportion of these individuals ac-

*Read before the Section on Public Health and Hygiene of the Illinois State Medical Society, May 6, 1931, at East St. Louis.

quire an immunity without showing obvious signs of the disease while a few may be typical cases of poliomyelitis. He says no evidence has been found that the virus reservoir may be largely in chronic carriers. No instances are known where one individual seems to have been responsible for the transmission of the virus to any number of others over a considerable length of time. (*Journal American Public Health Assn.*, Vol. XX, p. 41.)

In the California epidemic of last year it was estimated that 80 per cent. of total infection was not recognized. (*Jour. A. M. A.*, Vol. 95, p. 418.)

Recent research by Fairbrother and Hurst of the Lister Institute of Preventive Medicine indicate that the previous conception of infection through the naso-pharyngeal mucosa and transmission by axis cylinders to the central nervous system is correct. (*Jour. A. M. A.*, Vol. 95, Sept. 6, 1930.)

From the preventive standpoint we are not prepared yet to advise any proven procedure. There is some work, however, by Rhodes of Rockefeller Institute showing immunity in monkeys produced by injections of virus absorbed in aluminum hydroxide. This is as yet only in the experimental stage.

It is interesting to note the official report of the Alsace epidemic by the French regarding both morbidity and mortality. Their series of 405 cases in 1930 had a mortality of 10 per cent. The morbidity and mortality by age groups was as follows:

	Morbidity	Mortality
Up to 6 years.....	84%	7½%
6 to 16.....	11%	16%
16 plus	5%	20%

Only five cases were reported beyond age 21 (*Jour. A. M. A.*, Vol. 96, No. 2, p. 226 and p. 117.)

In California, 1930, the morbidity was as follows:

Up to 10 years.....	1000 cases
10 to 15 years.....	301 "
15 to 35 years.....	334 "
35 to 45 years.....	55 "
45 to 55 years.....	10 "
Over 55	3 "

Here 23 per cent. were above fifteen years of age. The remarkable variation here is the much higher incidence in California above 15 years of age. The morbidity in general decreases as age advances, but rate of mortality increases as age advances.

Our only attack against this disease at present seems to be to limit its course after it is established.

The serum from immunized horses or other animals has not been accepted very largely in this country. In France, however, a considerable degree of success is reported by the followers of Pettit who has developed a method of immunizing the horse. The general opinion here is in favor of convalescent or normal human serum. Work along this line has been done in Boston, New York and San Francisco. McNamara of Australia also has done considerable practical work in furnishing convalescent serum. The Commonwealth Serum Laboratories of Melbourne obtain, prepare and distribute convalescent serum. The George Williams Hooper Foundation for Medical Research of the University of California obtained from 202 donors 19,750 cc. of convalescent serum. This they distributed to physicians for injection in newly diagnosed cases.

The report on results sums up their experience as follows: "The value of this serum is apparently well established and of practical therapeutic importance even in the absence of controls." (*Jour. A. M. A.*, Vol. 96, No. 2, p. 117.)

The preparation of convalescent serum is from donors over ten years of age who have had at any time previous a case of definite poliomyelitis. This blood, of course, must show a negative Wassermann. The amount of blood donated is usually not greater than 250 cc. and less in young donors. The serum is separated, tested for sterility and a preservative added, then it is bottled and placed in refrigeration. The virucidal property is retained for three years, according to McNamara.

The efficiency of immune serum in treatment of poliomyelitis depends upon early administration. This in turn depends upon early diagnosis which is not easy. If the serum is given before paralysis sets in, the result is much more satisfactory. Dr. Thalheimer of Chicago thinks we should be able to give the serum before paralysis in many cases. Dr. McNamara, of Melbourne, thinks it may be given up to 24 hours after paralysis develops.

If given before paralysis develops a single dose may be sufficient but it may take a second or third dose to arrest progress of paralysis if

given after paralysis is evident. Dr. Thalheimer believes that if the preparalytic symptoms of poliomyelitis exist a spinal puncture should be done at once and if the fluid is sterile and with an increase in number of cells we should assume poliomyelitis to be the diagnosis and give the convalescent serum without delay.

Dr. Parks of New York suggests the following conditions that should be observed:

1. Early and prompt diagnosis and treatment.
2. Intraspinial injection of immune serum.
3. Intravenous or intramuscular injection of this serum.
4. Serum should have been collected from cases which have passed through an attack of poliomyelitis.

In children the dose is 10 to 20 cc. intraspinally and 40 to 80 cc. intravenously. If given before paralysis these injections may be sufficient; if not, intraspinal injections may be repeated. (Newer Knowledge of Bacteriology and Immunology by Jordan and Falk.)

This method of treatment being rather new has not a mass of statistics built up to prove its value. It is, however, adjudged by those who have worked with it as being of undoubted value. This judgment is reached by several groups working independently, viz., Boston, San Francisco and Australia. Inasmuch as we have had previously no effective weapon against poliomyelitis it seems imperative that physicians in medicine and public health prove the value of convalescent serum and perfect its application.

On public health officials falls the burden of obtaining and keeping available stocks of serum and this is far from simple. The obtaining of donors and preparation of the serum requires time and expense. So far this work is attempted only by endowed institutions. Those of us in health work who have access to records of past years have the record of cases of potential donors. These must be consulted and the object of the movement explained. Some of these will consent to give blood free or for a small consideration.

The practical value of convalescent serum demands a depot of serum available for emer-

gency use. Two such depots are proposed in Illinois, one in Chicago and one at the State Department of Health.

Dr. Thalheimer, who is endeavoring to develop the depot in Chicago at Michael Reese Hospital, is experiencing difficulty in obtaining donors in sufficient number to build up an adequate bulk of serum. My discussion with Dr. Thalheimer brings out the evident conclusion that if we are to expect that we may draw upon either pool of serum, we must expect to donate to that pool. If I can obtain donors who will contribute 800 cc. of convalescent serum and a like amount of adult normal serum between now and July 1, I will feel free to draw upon the pool for ten or twelve cases this summer and fall before my credit is exhausted. If I have no need for it the serum will be used where needed and the credit will remain for fresh serum at a later date.

The success of the pool depends upon large numbers of donors scattered over a wide area. Then a high incidence in any town may be treated from the pooled serum contributed by many communities. It will be simply an insurance in which we pay our premium in immune serum regularly and have our incidence of poliomyelitis covered when it may occur.

The unfortunate thing is that most cases of poliomyelitis are in the ages below ten. It is not very profitable to use donors below ten. Hence we will have to wait until they are old enough to act as donors. It will be wise, however, to impress upon the parents of recipients their obligation as donors at a later period.

The following conclusions seem evident:

1. Serum from convalescent cases of poliomyelitis or immune normal persons is as yet our only means of attacking poliomyelitis.
2. Its efficiency depends upon early diagnosis and treatment.
3. If we are going to have this material available when needed there must be laboratory centers where pools of serum may be collected, prepared and distributed.
4. The efficiency of serum depots will depend upon the cooperation of public health workers in obtaining donors.

DISCUSSION ON PAPERS OF DRs. H. J. SHAUGHNESSY AND H. A. ORVIS

Dr. Ralph C. Hamill, Chicago: I would like to ask if there is any opinion on the intraspinal injection of

the serum, as to whether that is in the same situation perhaps as the anti-luetic treatment is, that the intraspinous treatment is resorted to much in the same way that the hypodermic injection or intravenous injection is given before the method is discarded. In other words, it is more difficult, it is more dangerous, it is less commonly used. If the serum could be swallowed, everybody would do it. If it has to be injected in the spinal canal, only certain people who are going to do it, and it seems to me that all these treatments have to go through a certain period of testing out before any one of these methods is discarded. And I wonder whether the intraspinous method has been actually proven scientifically or experimentally to be more efficacious than the intravenous or possibly the intramuscular injection. Also if it is more efficacious whether, as was mentioned by Dr. Shaughnessy, it being merely an irritation of the spinal membrane, setting up, in other words, a marked myelocytosis in the spinal fluid, it is considered the efficacious element rather than any antibodies of specific immunity as being the efficacious agency. In the treatment of syphilis it certainly is a question whether the arsenic or the mercury that was injected into the spinal canal was the efficacious element or whether the fact that the spinal fluid that was returned through the serum was highly irritant and so set up a marked myelocytosis in the spinal fluid, whether that was the efficacious agent, just exactly as we were taught many years ago in skin disease, if you had a chronic condition of the skin you applied an irritating ointment; so with syphilis, being a very chronic process, being made by the increased blood supply, I wonder whether this acute infection type of thing, which is tremendously inflammatory, of the acute infectious type, an enormous increase of blood supply; in other words, whether that also is amenable to irritant agents in the spinal fluid or whether it is considered purely an immune reaction.

Dr. J. J. McShane, Springfield: In a college in Kentucky a number of donors were obtained among the students of this college. A young man, who worked in our department during the summer season and went to school during the school year, had been bled a number of times during his college career. I am sure that if an effort was made especially among college students, we could obtain a number of donors.

Dr. Shaughnessy (in closing): Answering Dr. Hamill's questions, as far as they can be answered, I would say that from the literature and from our own experiments on monkeys, there is perhaps too much emphasis on the intraspinous injection. I would personally say that one injection given at the time that the lumbar puncture was made for diagnosis would be perhaps sufficient except in extreme cases, the rest of the serum to be administered by the intravenous or intramuscular route.

In Australia and Canada, where they perhaps do as much of this form of therapy as anywhere else, they

make it a point to send out workers with all of the apparatus necessary for making a bedside diagnosis from the lumbar puncture. Then, while the needle is still in place, the first amount of serum is injected; none other than that. From an experimental standpoint, I think we can say that the intraspinous injection is somewhat superior to the other routes, but not enough, I think, to compensate for the irritation from repeated injections.

Dr. Hamill: Is it very irritant?

Dr. Shaughnessy: It is very likely to be. Of course, all injections of serum are, but of course there is a likelihood through pressure, which is one of the causes of paralysis, to produce still more paralysis where there is already an edema present in the nervous tissue as there is in this disease.

From the other standpoint, whether the results of the treatment are due to the calling out of the lymphocytes or other cells or whether it is a true immune phenomenon, I think the experimental results which are shown with normal monkey serum, which contains no antibodies as far as we can tell, and has no value in the treatment of the disease in monkeys, would indicate that it is more than just irritation; that there is a true substance present that inactivates the virus.

I would like to commend Dr. Orvis' attitude on this matter, as he said he is trying to collect in his own community the amount of serum which he expects to need. We, as Dr. Orvis already mentioned, are trying to collect at the State Department of Health a sufficient supply of convalescent serum to take us through the summer. As Dr. Orvis has also stated, the fact that so large a percentage of the cases are in young children and that we are not in a position to urge the donation of blood personally, makes it difficult to reach donors. In many cases we have to begin with correspondence which, of course, is not as satisfactory. We are finding it quite difficult to reach the number of persons that we could take care of. So far we have on hand just about a quart of convalescent serum, perhaps sufficient to treat somewhere between twenty-five and fifty cases. We ought to have ten times that amount by the first of July to treat the anticipated number of cases and to allow some margin. If you can possibly reach any donors and persuade them to donate blood, we would be very glad.

Dr. Arlington Ailes, La Salle: In these cases that live away from Springfield, how do you take the blood?

Dr. Shaughnessy: We have been getting them to come to Springfield because we have better facilities there to care for them, but we can make arrangements to send some one to your community, especially if it were possible to line up a number of possible donors so that we could make one trip and collect from all of them at the same time. Answering a question as to the age of the donor, somewhere around ten years of age is the earliest we have found it feasible to bleed. We would rather have blood from individuals who have had the disease within ten years, but we need this so

badly that we are willing to take it from persons who have an attack longer than ten years ago and then pool it with the serum from more recent cases. We are pooling about ten sera so that we expect to have a pretty good average of potency. Answering another question as to whether we have to type this blood of the patient, I say no, but that it is tested in other ways. The Wassermann test is made, as Dr. Orvis mentioned, and, of course, sterility tests. Apparently, typing is not necessary.

Dr. W. A. Smith, Benton: Through what channel or avenue will this be used in the actual treatment?

Dr. Shaughnessy: How will it be possible to obtain it?

Dr. Smith: Yes.

Dr. Shaughnessy: From the State Department of Health, for persons outside of the Chicago area. We have turned over the work of collection and distribution in the Chicago area to the Samuel Deutsch Convalescent Serum Center at Michael Reese Hospital, which is an endowed institution. They are much better prepared financially and have the organization to do this work, so that it is possible for them to reach the cases and get the serum. This is furnished free of charge.

Dr. Howard A. Orvis, Winnetka: A point comes up that strikes me as being quite important, that is transfusion in cases of poliomyelitis. Take the virulent case that comes on suddenly. If we are going to prevent paralysis the treatment must be immediate and heroic. In such cases the only hope might be a transfusion from a donor of proven potency. The proof of potency in one or more who would act as donors would be of wonderful assistance in the emergency.

Another factor about which there has been some argument in the Chicago area is the matter of paying for serum. At Michael Reese Hospital they are, I think, paying \$5.00 per 100 cc. We have been willing to pay in times of emergency \$25.00 for this amount. I think we can persuade many young fellows of high school or college age to donate serum at \$5.00 per 100 cc.

I am going to try to entuse some high school students to be donors. They are husky live fellows who I believe will come across. This will be for normal adult serum.

The donors for convalescent serum have to be appealed to individually from the standpoint of human service to sufferers from poliomyelitis.

It seems necessary that a uniform price be offered to all donors.

Dr. Shaughnessy: We are paying for blood from the donors at the rate of ten dollars for each 100 cc. and are also paying the expenses of the individuals in coming to the place where they are bled. That may serve as an inducement in getting them to come in.

Dr. Ailes: You want convalescent blood.

Dr. Shaughnessy: Yes. But we are planning to get normal serum, too, because we think we are going to need it.

CASE REPORT OF AN INTRAHEPATIC GALL-BLADDER IN AN ADULT WITH A REVIEW OF THE LITERATURE

OTIS M. WALTER, M. D.,
and

AARON NEIMAN, M. D.

CHICAGO

A complete intrahepatic location of the gall-bladder is an extremely rare occurrence in view of the scarcity of the reported cases. Because of the experience we had with our case, we can readily conceive of the possibility of confusing a complete intrahepatic gall-bladder with an absence of the same organ, of which there are relatively quite a number of reports in the literature. It seems plausible to us that some of the cases reported as absence of the gall-bladder may, perhaps, have been instances of complete intrahepatic location of the gall-bladder. Attention directed to the possibility of confusing the two abnormalities, however rare they may be, may prove profitable, since surgery of the gall-bladder is practiced so widely, and a clinical diagnosis prior to operation so far has not been recorded.

Deve, in 1903, was the first to employ the term intrahepatic gall-bladder¹ as far as we could ascertain from the literature. He studied one hundred and thirty livers in infants and he found eleven instances to justify in his opinion this term. Of these, three were typical and eight the fundus alone was more or less embedded.² The most marked case he noted was buried in the liver substance for two-thirds of its extent, and on this ground he defended the title intrahepatic gall-bladder.¹

Walton, in 1912, considered the writings of Deve, and Schachner, in 1916, defined an intrahepatic gall-bladder as being in part or wholly embedded in the liver substance.

We feel that in order to avoid confusion this term should be used only to describe and report cases of complete submersion of the gall-bladder in liver substance. Therefore, gall-bladders which are partially embedded, or rudimentary in nature, do not in a strict sense belong to this title.

In 1905, F. Lemon of Australia described a case of intrahepatic location of the gall-bladder with two tones, but he does not give the age or sex of the patient. His description consists

essentially of finding a "projecting eminence on posterior surface of the liver which appeared quite translucent. As no gall-bladder could be discovered, an incision was made on posterior surface of swelling when bile gushed out, and on further exploration two large gall-stones were secured."

Kehr, in 1913, stated that he has seen four cases of intrahepatic gall-bladder, and gives a complete history and operative findings of three cases. The experience he had with his cases is interesting and instructive. Therefore, we will give in short the history and operative findings of the three cases.

First case was a white female, 38 years of age, with symptoms of cholelithiasis of six years' duration. On operation, he did not find a gall-bladder, and he closed her up. Attacks of colic recurred, and patient had to resort to morphine frequently. Two years later he reoperated her and this time he made an incision into the liver and found a gall-bladder and two stones. Patient made an uneventful recovery.

Second case was a white female, 36 years of age, who came to operation with a preoperative diagnosis of cholelithiasis. On operation, no gall-bladder was found. He incised liver and found gall-bladder and two stones. The cut into the liver was accompanied by profuse bleeding requiring packing. The postoperative course was stormy and patient died twelve days after operation of a diffuse cholangitis and peritonitis. Third case was a physician from Constantinople, 42 years of age, with a clinical diagnosis of cholelithiasis. No gall-bladder was found. Incision into the liver was made and gall-bladder found filled with purulent material. Gall-bladder had perforated into liver substance. One large stone was removed. The septic postoperative course and a positive widal led to a diagnosis of typhoid infection of gall-bladder. Patient recovered.

For details the reader is referred to the original article by Kehr.

It is important to note that these are the first three cases on record with a complete history including age and sex of intrahepatic gall-bladder in adults as far as we are able to ascertain from a careful search of the literature. It is also of value to note that these cases occurred in a relatively short period, between 1908 and

1912, by one surgeon. This fact inclines us to the opinion that this abnormality occurs relatively more often than the scant literature on this subject would lead us to believe.

Case No. 14631. A white female, aged 27, who took sick in November, 1925, with attacks of pain in right upper quadrant of a pressing nature which was accompanied by nausea. She had a few vomiting spells. Between attacks she felt fairly well, with the exception of being badly constipated. These attacks were intermittent up to January 18, 1926, when she experienced a sudden attack of severe pain in the right upper quadrant, knife-like in nature, and radiating to right scapular region. She was nauseated and vomited frequently. On January 20, 1926, she entered the Frances E. Willard Hospital. Physical examination revealed a white adult female somewhat undernourished with acute abdominal pains. She was not jaundiced. Her temperature was 101.2, her pulse was 100, her respiration was 16, and her systolic blood-pressure was 110, and diastolic pressure 70. Blood examination revealed leucocytosis 17,500 red cells 4,700,000 and hemoglobin 70%, and urine had a heavy trace of acetone, but otherwise negative. Rest was essentially negative. January 21, 1926, she came for operation with a clinical diagnosis of cholelithiasis. The Mayo incision was made and no gall-bladder could be found. After searching for other pathology in abdomen to account for symptoms and not finding any, we resigned ourselves at first to a possible absence of the gall-bladder and a mistake in diagnosis. Were it not for the round edge of the liver, which attracted our attention, we would have closed her up. The surfaces of liver anteriorly and posteriorly were smooth. We decided to take a piece of liver for microscopic study. Then we had our surprise—thick, dark-yellow viscid bile gushed out, of considerable amount and apparently under tension. After clearing away the bile, a gall-bladder spoon was inserted and two large stones, which were ovoid in shape, were removed. The site was normal for the gall-bladder. The distance between the surface of the liver and the gall-bladder was about 3-4 cm. No cystic duct was seen outside of the liver. A drain was inserted and abdomen closed in the usual manner. Drainage was rather profuse for a while, but drain was removed on the tenth postoperative day. Patient left hospital on the fifteenth day and reports that she is doing well.

To our knowledge, this is the first case of complete intrahepatic gall-bladder in an adult with stones to be reported in this country.

Comment: To explain this peculiar disposition of the gall-bladder is quite difficult, unless we think of it as a persisting fetal or atavistic condition, or some error in development. Deve believed that in the process of union of the lobes of liver, the gall-bladder becomes surrounded

by liver tissue. Thus, the two primitive lobules of left-lobes are united to form one, and the quadrate lobe unites with the right lobe. He maintained that the gall-bladder is only intrahepatic in infancy, but later in life the liver tissue atrophies and gall-bladder becomes exposed. That an intrahepatic gall-bladder occurs only in infancy is no longer tenable in view of the cases reported by Kehr, and our own case.

Coughlin writes that the gall-bladder is at an early period of development buried in substance of the right lobe of liver.

Embryologically, the gall-bladder is constricted off from the ductus choledochus, and the connecting stalk becomes the cystic duct, and its development runs parallel with the development of the gastro-intestinal tract and rest of biliary passages.

The possible lesson to be derived from the above cases is this. When a patient has clinically symptoms of cholelithiasis, and on operation no gall-bladder is found, one should examine the liver carefully, perhaps needle it for stones before one makes a diagnosis of absence of the gall-bladder.

Summary and Conclusion:

1. Complete intrahepatic location of the gall-bladder is extremely rare in adults. When it does occur, it is usually associated with stones. To our knowledge the cases recorded which can be grouped under this heading are as follows:

Four cases by Kehr, with complete histories and operative findings in three cases.

Eleven cases in infants by Deve, of which three are said to be typical and in eight the fundus alone was more or less embedded. Strictly speaking it is questionable whether these cases belong to the heading of intrahepatic gall-bladder.

One case by Lemon, but he did not give age or sex of patient.

Our case in a female adult with stones. This makes a total of seventeen cases with histories and operative findings of five cases.

2. The idea that intrahepatic gall-bladder occurs only in infants as Deve believed, is no longer tenable.

3. Attention is directed to the possibility of confusing an intrahepatic gall-bladder with the absence of same organ. Such an experience is recorded by Kehr.

4. As an aid to the diagnosis of intrahepatic gall-bladder in case of suspected absence, needling the liver between right and left lobe may be advisable.

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FACILITIES FOR TREATMENT OF MENTAL DISEASE AND COST OF SAME*

CHARLES F. READ, B. S., M. D.

ELGIN, ILLINOIS

Consideration of this subject must be limited to the treatment of mental patients in some form of an institution; otherwise facilities are limited and the cost too indefinite to be considered.

Institutional treatment may be carried out in one of four ways.

1. In a general hospital.
2. In a sanitarium.
3. In a psychopathic hospital—a teaching and research institution associated with a medical school.
4. In a state hospital.

General hospital care is unsatisfactory because very few pavilions for mental patients are provided—in fact, there are none in connection with the general hospitals of Chicago, to the writer's best knowledge. Mental patients are quite unwelcome in a general hospital; their care involves a single room and almost always at least one nurse, often two. The cost to the patients' relatives, including the attending physician's charges and those of his consultant, may easily run from thirty to thirty-five dollars a day. Later on it will become even more evident that without special arrangements for the care of mental patients, the general hospital cannot provide adequate treatment.

Sanitarium care may cost anywhere from

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twenty-three to three hundred dollars a week, but the type of treatment furnished varies so widely that it is difficult to say what the cost of adequate treatment in a private institution should be, remembering always that there must be a net profit of, perhaps, twenty to thirty-five per cent. to the owners.

Psychopathic hospitals in the United States are few in number—in all, less than the fingers upon two hands. Per capita costs run, as given to me in a few of these: \$4.29 at Ann Arbor, with sixty in-patients and twelve hundred out-patients during the year; \$5.50 at the University of Colorado Psychopathic hospital, with eight hundred admissions and nine hundred and fifty out-patients during the year. The Psychopathic hospital of the University of Iowa spends \$6.50 a day upon its patients, the number of which is not stated. The Boston Psychopathic hospital averages (1929) \$58.75 a week for in-patients (about 80) but examines 1,049 out-patients a year. Thus the average cost of care and treatment in institutions of this type based merely upon the number of in-patients, runs from \$5.00 to \$7.00 a day. Research, teaching and out-patient departments add so much to the financial load, that it is difficult to estimate the exact cost of maintaining a bed patient during the period of diagnosis and treatment. Those who require continued care and treatment naturally are not retained in teaching hospitals of this character.

Approaching finally the question of state hospital treatment, the figures become still more difficult to analyze, in view of the fact that the character of the treatment furnished in such hospitals varies, as in sanatoria, from poor to what may be considered adequate, if not ideal. These institutions are maintained at public expense and the burden upon the taxpayer must always be considered. No attempt has been made at this time to select representative institutions. Such comparison would be odious and very possibly unfair. Elgin State hospital in the year 1929-30 spent \$228.59 upon the care and treatment of each patient. In 1930-31 the estimated cost will be \$250.00 to \$260.00. The Central hospital of Indiana, in its report for 1930, shows a per capita cost of \$322.00. The Rochester State hospital, New York, a rather small institution, spent \$419.00 per patient in 1929-30. In Massachusetts in 1928 the cost at the Boston

State hospital and at Worcester was almost exactly a dollar a day.

These are the figures for various types of institutions for the treatment of mental patients. What ought these figures to represent in the way of medical care? Few in the general profession can appreciate all of the implications of the word *treatment* in mental cases. The elements of general hospital care are familiar quantities in so far as the physically sick are concerned, but to the diagnosis and treatment of what may be a physical ailment in a mental patient must be added a very considerable amount of clinical and laboratory, as well as social, investigation that is not usually a part of general hospital care. A brief inquiry into this phase of the problem may be of interest here.

In the first place, diagnosis implies far more than a mere physical evaluation of the mental patient's present status. It is necessary to know what sort of a person has reacted in an abnormal manner to various stresses and strains originating from within and without. As much as possible must be learned concerning heredity, birth and early development, intellectual and social adjustments, sexual history, injuries and diseases, work adjustments, toxic influences, previous attacks of mental trouble, the onset of the psychosis, etc. Dementia praecox, involutional melancholia, paranoid states, epileptiform phenomena, etc., require especial effort in collecting all the essential data.

The examiner must be prepared to supplement the ordinary procedures of general physical and neurological examination, with estimates of constitutional makeup, blood chemistry, colloidal blood states, basal metabolism and electro-cardiographic studies, encephalography, various tolerance and permeability tests, x-ray work, gastro-analyses, etc. For a comprehensive view of the data essential to an adequate estimate of a mental patient's status and the mental mechanisms involved, I would refer you to a manual gotten out by Dr. George H. Kirby, of the New York Psychiatric Institute—"*Guides for History Taking and Clinical Examination of Psychiatric Cases*." A half hour's study of this eighty-three page publication will go far to enlighten the non-specialist as to the vast amount of painstaking work involved in collecting data for a psychiatric diagnosis.

It would be superfluous here to consider at

length the mental examination, which may require anywhere from a half-hour in the case of a senile or parietic (exclusive of laboratory work) to days or weeks of laborious investigation in cases of so-called functional psychosis. Repeated interviews may be necessary before the case is prepared for presentation in staff conferences, after which frequent progress notes must be made and other workups as the case develops later on.

In order to proceed thus far with the case preliminary to treatment, it is essential that the patient be in charge of trained observers, psychiatric nurses and specially trained attendants, internes and resident physicians, and there must be ready access to a well staffed laboratory and to such surgical intervention as may be indicated. Pupil nurses' training schools must be maintained and a considerable amount of teaching carried on, not only in these schools, but in the clinical instruction of various visiting groups and of the community at large. These latter efforts, while not directly centered upon the treatment of the patient, all affect his welfare sooner or later. Out-patient departments should be maintained for the benefit of the surrounding communities, so that mental patients, or prospective psychotics outside, may receive attention and early treatment in the hospital assured if adjustment cannot be accomplished otherwise.

The personnel involved in any adequate attempt to diagnose and treat new admissions and to carry on the care and treatment of older cases is considerable. In a state hospital, where the patient remains until such time as he is paroled, discharged, or dies, an evaluation of the cost of treatment of recent admissions is difficult, but without doubt it would run, so far as medical and nursing care is concerned, to twice the expense of continued care and treatment of patients after they have been in the institution for a number of months.

Possibly it may be permitted here to refer to the state hospital with which the writer is connected. For an estimated average population of 3,800, the coming biennium provides a little over half a million dollars a year in salaries and wages and for various other expenses almost another half million, or in all about \$266.00 to spend upon each patient per year. This is not a large figure, but times are hard and taxes are high; also, foodstuffs and other commodities are

much cheaper than they have been for a long time.

Personnel, after all, is the main factor in the treatment of mental cases and naturally the most expensive single item in the maintenance of mental hospitals, equal in amount to the cost of all other items combined. To our present salary list, if tax burdens were not to be considered, might very well be added several more physicians, a pathologist, laboratory technicians (if the laboratory of the State Psychopathic Institute were not located at this hospital) a number of trained occupational therapists, two physical directors, and many more attendants. The salaries of such an additional group would amount in all to at least \$100,000.00 a year. If we divide this additional cost of treatment by our average number of patients, we find this per capita increase per year to be about \$26.00, and adding this thirty to the already established per capita of \$266.00, we arrive at an estimate of about \$300.00 a year. To this also might be added an interest charge of four per cent. on the investment of \$2,500.00 a bed (very moderate replacement cost) thus bringing the total expense up to \$400.00 a year.

Although we feel that we are doing well at the present time, the above additional personnel would assure each individual patient coming in to a state hospital of this size quite adequate treatment along the lines above described for the first three months of his or her hospital life. After this time, should the patient not improve enough to be dismissed, treatment would inevitably tend to become more and more group-like in character, but there would still be abundant resources, including personnel and equipment, for individualization in such cases as might seem especially to require this. Of course, it goes without saying that when we speak of personnel we have in mind high types of medical officers, social workers, nurses, occupational therapists, and laboratory assistants—people who receive appointment upon their merits and are continued in their positions only so long as they do good work.

In 1928 the per capita cost of the Illinois state hospitals varied from \$235.00 to \$300.00 for an average population of 21,869 and to this cost of maintenance must be added the cost of permanent improvements, involving many millions of dollars at Elgin, Lincoln State School and Col-

ony, etc., and especially in the construction of an entirely new institution at Manteno, which will be developed into a hospital for some 5,000 patients. Proper housing reflects itself inevitably upon the physical and mental status of state hospital patients. In the past two years Illinois has done an especially fine piece of work at Elgin by the construction of new cottages (principally for the continuous care and treatment groups) providing 1,100 beds to relieve the crowding present at the beginning of this period.

At Elgin the budget for the coming biennium contemplates a new diagnostic building, with a capacity of 200 patients, at an approximate cost of a quarter of a million. This building will necessarily be a simple construction, but will furnish everything necessary for the proper care, diagnosis and temporary treatment of newly admitted cases, which are coming in at the rate of 150 a month at the present time. One of the older buildings has been remodeled especially for research and special treatment purposes. The laboratory of the Psychopathic Institute provides every facility for laboratory examination and together with the hospital, the Institute, under the direction of the Alienist, Dr. Sidney D. Wilgus, is carrying on what may prove to be important pieces of research work. And yet it should be added that this Institute laboratory furnishes little more than the facilities requisite for proper diagnosis and treatment in every state hospital.

CONCLUSIONS

Home care for acute mental patients is inadequate and expensive.

Sanitarium care ranges from poor in character to what may be considered adequate, but is within the means of comparatively few people nowadays for any considerable period of time.

Special research and teaching hospitals are few in number and the cost of maintenance, because of the teaching done and the large number of out-patients dealt with, cannot be compared with state hospital costs.

State hospitals are the mainstay of all mental treatment programs. These hospitals should be maintained upon the same basis as our public schools—as public welfare projects, open to all without any stigma of “charity” attached.

Adequate state hospital treatment involves proper physical equipment at a minimum cost of \$2,500.00 to \$3,000.00 a bed.

The diagnosis of a mental case is often a far more exacting procedure than that involved in physical disease alone.

Personnel is the most important and most expensive single item in state hospital maintenance, involving at least one physician for every 175 patients, a competent laboratory staff, a complete surgical and medical hospital setup, registered nurses upon all sick and acute mental wards, a corps of hydrotherapists sufficient for twenty-four hour service, a training school, social service and occupational therapy departments, and facilities for out-patient and educational work in the surrounding community.

The State of Illinois at present is giving its insane good care and is looking forward to a program of treatment that can be considered adequate. Millions have been spent during the past two years in the relief of crowded conditions, which expenditure will inevitably result in the physical and mental improvement of the patients. More physicians and nurses are constantly being added to the personnel at the various institutions and a definite attempt is being made to give patients individual treatment in place of group care.

DIAGNOSIS — CLINICAL DEMONSTRATION OF CLASSES OF MENTAL DISEASES*

RALPH C. HAMILL, M. D.,
CHICAGO

We psychiatrists are all accused of using fancy names. I presume the imputation is that we use the fancy names to disguise our ignorance. I think that is a perfectly correct statement of affairs. I am going to try and keep away from fancy terminology and, so I suppose I am going to demonstrate my ignorance. The diagnosis of committability is, perhaps, what you gentlemen are most interested in. This is a great social problem, the question of committability. The practice, for instance, in the psychopathic hospital in Chicago in the staff meetings is to discuss at great length the case, all the mental symptoms as far as they can be discussed, and after it is all discussed from that point of view, finally the question is taken up very shortly as to whether the patient is committable or not.

*Read before Section on Public Health & Hygiene, Illinois State Medical Society, May 6, 1931, at East St. Louis.

And I should say that somewhere between one-fourth and one-third of the cases discussed as mental cases, are not considered committable; that the committability of a case is, in other words, a very different thing from merely the mental disease side. After all there is a problem of conflict in all social life. All social life is a matter of conflict. All life is primarily and fundamentally instinctual. There is some element in the human drive that leads to the creation of idealism and out of that creation of idealism comes what we call social behavior. Social behavior is something we have to learn and we all have to learn it by the route of being wrong in our instinctual efforts and being corrected and trimmed to fit the social pattern of the community in which we live. So the essential thing is that there is this conflict with every single one of us. Every one of us wants to be more selfish than we dare to be. I dare say most of us would confess at some time or other that every one of us would like to be more sensuous than we dare be. And after all these two general things cover practically the whole of life, selfishness and sensuousness. Every single individual, I believe, would gladly be more selfish and more sensuous than they would dare to be or, in other words, we have that drive to be these things but the social pattern of the community in which we live makes it impossible for us to be those two things. In other words, if there is this social or mental conflict or so-called disease present with everybody, then it is merely a question of whether the rest of us can get along with any particular individual, as to whether we are going to let him stay in the community or have to put him away. The committability comes down to the question of whether there is anybody to take care of the individual outside of an institution or whether he is to be cared for inside of an institution; in other words, if he will not adjust himself sufficiently to the demands and rights of other people, there has to be a place to take care of him. There are two places; one is the insane hospital and the other is the jail. So, the committability becomes entirely a question of whether there is anybody to take care of the individual outside or whether the individual can adjust himself enough to be

taken care of outside. For instance, a young man of 21, who was in the divinity school at the University of Chicago, was brought in to me by his uncle, who told me that the young man had been acting and talking as though he believed he was Jesus Christ, and the young man easily confessed that to me; he showed it quite plainly. Being in a hurry that day, I said to the uncle, "Well, you better take this fellow right over to the psychopathic hospital." He went to the psychopathic hospital. I lost track of him. A year later he came into my office with his eyes blazing. I didn't know whether he was going to shoot me or not. He said, "You sent me to the psychopathic hospital a year ago. Seven doctors examined me and they turned me out." And then a crafty little look came into his eyes and he said, "I didn't tell them anything about that Jesus Christ stuff." In other words, on that trip across the city or after getting in the psychopathic hospital he found out that things weren't as rosy as he hoped they might be, or something of that sort, and he had learned to keep still about the fact that he believed that he was Jesus Christ and could believe what he wished. And so, as he came in the second time, he said, "You and I know that I have got sense enough not to talk about being Jesus Christ when the officers of the law are around." And that is what it amounts to. He was still socially adjustable to that degree. He had not as yet given up entirely to his belief that he was Jesus Christ.

Now, the first man here today was 23 years of age when he was admitted to the hospital in June of 1929. He was born a normal child which, in view of the pictures we saw here today, especially of these birth injuries, brings up this question in my mind, something that I feel that the general medical public is the only source from which we are ever going to get the question settled; viz.: that there is a certain percentage who have blood in the spinal fluid at birth. I believe that percentage, from all tests that have been made and all statistics that we have, is great enough to, account for all insanity, epilepsy, feeble-mindedness and perhaps behavior problems. But this man was said to have been born a normal child. Of course, that is a hard thing to be sure of unless a spinal tapping is made on all infants. Blood may be

spread over the cortex of this rapidly developing, tremendously complex mechanism with which we meet the problems of life, and a little of it may account for a great many of these cases that turn out to be individuals who can't meet the demands that society makes on them.

This boy had very nice manners at first and then he had a change of attitude, and took pleasure in insulting any member of his family. I think as a matter of fact, if we could understand every case of mental disease we would understand primarily that that person was being what he wished to be, was trying to behave as if his wants were facts. I am perfectly sure there are grandiose ideas going on in this brain with complete insensitiveness to the world about him, pictured in his behavior. One is reminded of the attitude of Buddha by this attitude of catatonia, of complete self-centeredness.

There was a time when this boy, Arnold, resembled a catatonic in a way; that is, he came back to the hospital at one time after a parole and seemed to be confused and remained in bed quietly and wouldn't talk and seemed to be somewhat depressed but this condition didn't last long. In a few hours after his people had gone away, he became jovial. To avoid technicalities, we believe that parents and other members of the family, especially the elders, are the stuff out of which we develop what we call a conscience or our idealism. In the presence of his people he was moody, depressed and retarded. In other words, as long as his conscience was active, this was his state of mind but as soon as his conscience left him, viz.: his family went away, he felt better. Now that brings up a very important point in the whole business of committability. How well does the patient get along in the family and it is possible that he gets along outside of the family better than he does in the family and can be taken care of outside of an institution and not inside of the family circle. That is often the case because the family represents the conscience. It is as if we were all small children and were still afraid of father and mother. As soon as this mental disease stuff begins to get the upper hand, then that's what you see. So, committability, depends on the adjustability of the individual in the community, living primarily in the family.

Very often they can not live in the family. I mean, we see many cases of a mental outbreak shortly after marriage or shortly after an engagement, where this close association with another individual is envisaged.

Often a person can live outside of an institution and not in the family. In other words, they don't have to be committed if there could be found some kind of foster home for them. When the degree of divergence or inadaptability is sufficiently great so that neither of those two conditions can be met, neither the life in the family nor the life outside, then that patient is committable. Now, how would you determine that? Well, I think that is where the catch comes in. I suppose I have to admit that is where the catch comes in, because it has been my experience, and I think it is very common experience, that for the first few years of contact with mental disease we don't know whether they are telling the truth or not because they believe what they are telling, and it is only with experience that one begins to get a slant that the patient is hallucinated or is telling you their delusions because they can so easily make up their delusionary content and rationalize it to such a degree that they can fool almost anybody.

Now, of course, the development of psychiatric social work is of great assistance and is gradually growing in importance in aiding the handling of this situation.

This patient (indicating) of course is perfectly obvious. It seems to be dementia praecox of the catatonic type. He won't answer. His hands are wet. You can see the color of them. One can see that all these cases must be judged both from the mental and physical side. However, I feel that the physical side of all these problems is especially important from the sympathetic nervous system standpoint. In other words, the reflexes and sensationss, and adroitness or ataxia or lack of ataxia, or things of that kind, are really unimportant, but signs like these of the involvement of the sympathetic nervous system—those are the things that are to be seen time after time in the dementia praecox situation; I would say, rather, the evolutionary insanity, viz.; the insane who just gradually go crazy, who do not meet their adjustments, and I think that these physical signs will always be looked upon as signs of fear.

SHALL MENTAL DISEASE COME UNDER PUBLIC HEALTH REGULATIONS*

ARNOLD H. KEGEL, M. D.

CHICAGO

Authorities on the subject of psychiatry have presented evidence in this symposium presented to the Illinois State Medical Society to the effect that mental disease, with all of its devious ramifications, is on the increase to an alarming degree, not only in the State of Illinois, but throughout the United States. The fact that our insane asylums and penitentiaries are filled to overflowing, that there is a lack of adjustment to environment on the part of an increasing percentage of the population, is sufficient evidence that mental disease is well placed in the realm of public health problems.

The trend of public health work is ever changing, depending entirely upon the problems which arise for solution. From matters pertaining entirely to sanitation it has progressed to include successively control over water supplies, milk supplies, and the routine control of contagious disease to its present effort to add to the sum total of human happiness and health by delving into the health of the individual. Outstanding in the more recent efforts is that of the prevention and the correction of defects among school children, which is being carried on the crest of a nation-wide move following the White House Conference on Child Welfare called by President Hoover. This trend in recognizing present day problems must, because of the demands of society to be relieved of unbearable burdens, eventually include the prevention and control of mental disease.

Mental disease is responsible to a great extent for vagrancy and habitual criminality, resulting in the grievous crime condition which exists throughout the United States. Recognizing mental disease as a public health problem, it is necessary that an official agency be designated whose duty it will be to sift out and treat the individuals who come under the category of "mentally diseased with criminal tendencies." The statutes of the State of Illinois do not provide for nor designate any official agency to find or sift out mentally diseased individuals who

commit or may commit anti-social acts. The statutes do provide that any reputable citizen may file complaint or cause to be apprehended an individual who in his opinion is suffering from mental disease, thus establishing a condition which may be described as a matter which is everybody's business, but resulting in being no one's business. There are many instances which could be recited, but which are not within the realm of this article which would demonstrate the fact that mentally diseased individuals who are known to be a danger to the community are at large because of fear or reticence on the part of citizens. The lack of concentrated effort on the part of an official agency has resulted in countless numbers of crimes against nature and has endangered the very foundation of law and order in many of our communities, especially the larger cities.

Toward the solution of the ever increasing problem of sifting out and dealing with the mentally diseased with criminal tendencies the following resolution was presented by the writer before the council of the Chicago Medical Society and was endorsed unanimously by that body:

WHEREAS, mental disease is recognized as a public health problem, and

WHEREAS, a grievous crime condition exists in the United States with a concentration in large cities of mendicants, vagrants and habitual criminals among whom are many mentally diseased, and

WHEREAS, the statutes of the State of Illinois do not provide for nor designate any official agency to find or sift our mentally diseased individuals who commit or may commit anti-social acts, and

WHEREAS, the Department of Health of the City of Chicago derives its power to deal with disease from Article 5, Section 1, Paragraph 78, of the Cities and Villages Act, which expressly authorizes the city council to do all acts, make all regulations necessary or expedient for the promotion of health or the suppression of disease, and

WHEREAS, under this provision express authority is granted the municipality to pass all ordinances or requirements tending to promote the public health, morals, security, comfort and welfare of the community, and the Supreme Court of the United States has so held:

*Read before the Section on Public Health and Hygiene of the Illinois State Medical Society, May 6, 1931, East St. Louis.

Therefore, be it resolved that the Department of Health of the City of Chicago be empowered by the passage of the proper ordinance and be given the necessary personnel to examine mentally persons charged with crime or delinquency before trial; the Department of Health to serve in an advisory capacity to the judge and to submit to the judge a written report of the findings for his consideration in the final disposition of the case.

The subject matter of this resolution is unique in that it seeks to apply the powers granted under the Cities and Villages Act of the State of Illinois to deal with mental disease in the same manner under which departments of health have successfully dealt with communicable disease and have promoted the public health, morals, security, comfort, and welfare of the community wherever necessary. The empowering of a department of health to examine mentally persons charged with crime or delinquency before trial and to serve in an advisory capacity to the judge concerning the individual's mental status does not in any way interfere with the present statutory management of the insane, but does thereby give to the judge information which will assist him in dealing justly with every case which comes before him. This consideration with particular reference to mental diseases at the present time is given only to selected cases or a privileged few.

Through this approach the community will be given information which it needs concerning the relationship of mental disease to crime and better methods of dealing therewith. It will be found in Illinois, as in other states, that a wholesome percentage of individuals who are mentally diseased and have criminal tendencies and who are irresponsible will be found able, and in many cases willing, to support themselves under proper supervision. Likewise it will be found that they should not be incarcerated in asylums or penitentiaries, supported by taxes. In recognizing mental disease as a public health problem the gate is opened to the replacement of punishment with scientific study and care and possible rehabilitation of a definite group.

DISCUSSION

Dr. W. A. Evans, Chicago: I see that I am to talk on the subject of Prevention of Mental Disease. Dr. Kegel has proposed that the Department of Health be empowered under the law to gain information about

cases of developing mental disease, to examine them, and to initiate procedures for the proper control and care of people who are thus diseased. This is based upon three premises, the first of which is that mental disease is a disease differing in no essential (as viewed from the standpoint of preventive medicine) from physical disease. If it is a worthwhile problem, if something can be done about it, then it is worth doing something about. I take it that we need not argue that it is a worthwhile problem. The State is now overwhelmed with the necessity for taking care of a small part of those who are mentally diseased. The cost of treatment of developed diseases in State institutions, maintained at State expense, is far greater than any other to which our government is being put at the present time, unless it be the matter of education. I think it is illustrative of what would be the condition of affairs with physical disease were its care undertaken in the same way as a State function at State expense. The care of those physically sick would entail a burden upon society that society, in an organized way, is incapable of bearing as things now stand. Of course, conditions would have been very much worse had it not been that a good long time ago the relation of prevention to developed physical disease was discovered and recognized, and we undertook in an organized and systematic way to prevent the development of certain types of physical disease. And that has greatly reduced the incidence.

We haven't done the same thing with mental disease. The burden has been permitted to continue, society taking care of nothing except the end product, which is multiplying and increasing constantly until we have now got to the point where the expense and other burdens connected with it is threatening to break down the entire social fabric.

There should be some way in which prevention could be applied to preventable diseases of the mind, as it has been applied with such success to preventable diseases of the body, and if no such way can be discovered, or if no such methods are presently applied, I can't see anything other than, in the course of time, it is going to wreck our social structure. Even if we don't know what to do, we better begin doing something and, in that way, discover to ourselves the immensity of the problem and eventually to find out for ourselves the methods of doing the job which now escapes us.

When preventive medicine was applied to physical disease, we knew comparatively little about what we should do. The very fact that we knew so little is what stirred us to the discovery of things to do. Those that we were uncertain or wrong about (and positive that we were right), as the result of trial and error, have been so perfected as that they are now valuable procedures. The point to all of that is this: If we postpone the inauguration of doing anything until we know full well what to do, until there is no further possibility of perfecting the process, we don't get very far. Everything that has ever been undertaken, which has eventually succeeded, so as to meet the broadest expectations of those engaged in it, has been begun as an endeavor the success of which could not be guaran-

teed. At the beginning the end could not be foreseen and as the result of the experience the thing has worked out. It would seem to me to be quite excusable and in fact quite proper that we should not longer delay preventive work against mental disease because we can't see through to the end or perhaps because we can't see around the next corner. If that is our attitude towards it, we will never begin because there never will be a day when, standing from without, we can see through to the end.

Now, what are we going to do about it? Dr. Kegel has proposed to the Chicago Medical Society a very simple little procedure, and I believe that it has been approved by that society. It is merely a first step. He calls our attention to the fact that the machinery for originating investigation of differentiating mental diseases is very incomplete. It perhaps was necessary, way back yonder in the beginning, to put these safeguards around it. I take it that we all call to mind cases, some of which are historical and others which are within the personal knowledge of those who are here, in which unfair advantage has been taken of people and perhaps they have been improperly confined under a charge of insanity or under legal proof. In order to prevent that from happening, we threw around the procedures so many safeguards that it doesn't work satisfactorily or at all logically. That is true of a great many of our social procedures. Of course, they came out of the days when society was rebelling against the centralized powers of Great Britain and the barons, dukes and lords of that country. Thus came the Magna Charta and other instruments that grew out of it, which provided for our jury system and a half dozen of our procedures, including those that presume a man is innocent until overwhelming proof of his guilt has been adduced. I might cite a good many illustrations of the fact that, serving to protect the individual against such invasions of his rights, we have built up an elaborate machinery for protection that placed the decent members of society enormously at a disadvantage as against crooks and other enemies of society of various sorts and kinds. This elaborate machinery to protect people who are a little "queer," or people who have been confined for one reason or another, has brought us legal machinery that is inadequate and which doesn't at all fit the case. One of the best illustrations that we ever had around Chicago was a lawyer whom no one but the very aged and senile in this audience will remember, and, let me say, whom I remember very well. He was Frank H. Collier, who had what was then termed a "circular insanity." When he was very offensive he irritated a great many people, and some of those who were irritated would prefer charges against him. He would be arrested and his case would come up for trial during a period when he was inoffensive, harmless and meek, or else during a period in which he was quite normal mentally. As a general proposition he was declared sane and freed of the charge. He made more than one member of our profession very uncomfortable because he got to be a professional advocate in this matter and more than a match for the doctors who swore that he was insane.

The net result of it all was that though he was just as crazy as he was when he was offensive, because he was so inoffensive and harmless when on trial the jury generally cleared him. Over the course of years he had been in a good many different courts and had been on trial many times; he was crazy in some courts and sane in other courts. The point that I am trying to make is that the test was his offensiveness to other people and not at all a condition that was peculiar or that ran straight to the heart of the thing, the machinery operating on the basis of the reaction of certain other individuals. Now, there is not any logic in that and certainly there is not any science.

Dr. Kegel proposes that we simplify that machinery and make it somebody's duty to investigate and stimulate it by considerations other than those of the rights of certain groups of people and, of course, so far as that goes, it is very much better than the present machinery. I think he appeared before the Chicago Medical Society with this proposition and he has their endorsement. That's just the beginning. He was there doing nothing more than providing a better method than the present one of selecting out of the community those who were mentally disintegrated; or he was devising machinery for selecting people who were just on the threshold of disintegration. That wouldn't accomplish a whole lot unless he went further. But history teaches us that such a beginning would have been nothing more than a beginning and that it would have to go further. In fact, it quite speedily resulted in the establishment in the Department of Health of a bureau of mental diseases, having something to do with the prevention of mental disintegration as well as the more scientific care of those who were mentally diseased. Of course, that is just at the beginning of prevention. In fact, it isn't much more than a gesture of prevention. Inevitably it would have led to other preventive medicine procedures just as naturally as such other procedures have followed in the wake of beginnings in other fields of preventive medicine. Naturally, there are many things that occur to you. In the first place, there are the toxic psychoses of which the cause is known and, therefore—theoretically at least—the prevention should be easy; various forms of alcoholic psychosis, of opiates and other drugs, including veronal, and the drugs of the group. Now, they are extensively used, leading to a very considerable amount of harm, some part of the responsibility for which is with the medical profession and some part with the people. But the ultimate possibilities of the harm done by it are not being made apparent to the profession or to the people. And with respect to the sleep-producing remedies, there is no restriction upon the use or purchase of those remedies by anybody.

Then, of course, there comes that other great group of mental diseases that is very important, which follow in the way of syphilitic infections and that is half way in the Health Department now. We are finding a great deal of difficulty in getting support—community and other support—for the treatment of venereal diseases. If we could develop hand in hand with that, and with their responsibility for so much of mental diseases, so

costly to the community, it would be easier to carry out a venereal disease program than it is in the absence of that effect, and, in the absence of the integration of that effect, with the other harmful effects of venereal diseases.

There are, of course, the great personality diseases—the emotional diseases—so many of which ultimately result in insanity. They do very much more harm to society before they result in insanity than they do after. This is a great group of many millions of mentally sick people who are not now being cared for in that particular relation by any arm of society or even, for that matter, by the medical profession. I mean in relation to the ultimate mental harm that comes out of the failure to train those people on the basis of their personality diseases. They graduate from personality diseases into insanity. Types of personality diseases that result in insanity are recognized long years before the ultimate comes. These wise men who work in mental medicine know them for ten, fifteen, twenty-five, or thirty years before they finally get to treat them and know that in all probability getting them in their care eventually is inevitable. Now, that information is in hand and yet there is not any machinery of government for making practical use of it except in two or three places. That is, in two or three little types of activity, rather in two or three geographical places.

An then there is the interesting group of people who are idiots and feeble-minded—the arrest of mental development at various levels—for which something must be found and will be found. It seems that we might be on the road towards doing something for that group of people in the way of a cure of the condition after it has developed. If nothing else can be done, there is the great question of sterilization, to the end that they may not come into the world unless under conditions that have been demonstrated to be proper.

Now, if all of this is as important as what we have been saying would indicate, why is it that we have gone this far and done nothing about it? As a matter of fact, there is proof in what has been done that it is the right thing to do. The Chicago Health Department is not the only department that has tentatively organized a division of mental hygiene in the health department. The Westchester County Health Department, in New York State—perhaps one of the most carefully planned in advanced health departments that we have had in this country, functioning in one of the wealthiest counties in America, and starting out deliberately to plan their department of health well—has taken from the Sing Sing institution the medical director who was there for a great many years and put him in charge of the bureau of mental hygiene in the health department. This bureau has to do with the prevention of those mental diseases that eventuate in criminals, in insanity, and in other things. A good deal has been done in the same way in the State of Massachusetts. I am sure that I could cite to you a great many illustrations elsewhere of departments of health that are feeling around on this thing. The urge is there. They see the need. They see something must be done. They

recognize how they can do a few things and then they have begun. The fact that they have started, I think, is additional proof of the need that something should be done in this matter. (Applause.)

Dr. F. J. Gerty, Chicago: Classification has been one of the chief objects of specialists in mental diseases until rather recent times. It is very unfortunate that this is so. It is difficult to classify, definitely, any such body of knowledge which is so little understood and which is so inexact as the subject of mental disease. I am not going to say much about the ordinary classifications, such as the ones found in the statistical manual for the classification of mental diseases. Instead, I shall use something much simpler. Practically all of the mental abnormalities can be placed in five elementary groups. The first of these groups is *amentia*, or feeble-mindedness. Here there is retardation or lack of development of mental processes from birth or childhood. We should recognize this condition early, for some of these patients can be trained to perform useful functions in life. Highly trained people do not care to do some of the work that many of these patients can do with credit to themselves and to the community. The second group that we should recognize is that of the *psychoneuroses*. I believe it will not pay to adhere too strictly to the old classification of *hysteria*, *neurasthenia* and *psychasthenia*. All of us, at times, undoubtedly show tendencies and symptoms which, when found in other people, we would say are evidences of *psychoneurosis*. Certainly, we who are here can understand, from the adjustments we have made in our own lives, that there is something in the training of the individual which accounts for many of these symptoms. There are certain contacts that the patient has made, certain difficulties that he has met, or certain failures to solve situations in the most comfortable manner, that result in the *psychoneurotic* manifestations. Dr. Hamill's paper touched on this subject this morning. It is very important that the general practitioner recognizes this particular group as soon as possible. It is better to treat the patient for what is wrong with him, rather than for surgical and medical conditions which probably have little to do with his symptoms. We should not discourage the *psychoneurotic* from accepting, in a medical way, the treatment which he sometimes gets in a blind and unreasoning way from other practitioners, such as *Christian Scientists*, *chiropractors* and *osteopaths*. A third general group is that of the *dementias*. Here there is a loss of previously acquired intellect. On first thought, this group seems to be a rather hopeless one, because there is a deteriorative, destructive process at work. Yet *general paresis* is a condition classified with the *dementias*, a deteriorative, destructive process of the central nervous system, accompanied by mental symptoms, and in connection with that condition we have experienced one of the most brilliant successes in therapeutics in modern times. I refer, of course, to fever treatment. Since such good results have been accomplished in one type of *dementia*, it is possible that other therapy can be found which will arrest other deteriorative changes. Many cases of *paresis* are not recognized early. I need

hardly stress the importance of early recognition when we have an effective remedy at hand. The fourth group is that of the psychoses, those functional or qualitative changes which result in abnormal thinking, acting and feeling, but unaccompanied by any destructive organic processes. I do not intend to discuss the varieties of psychoses. It is important that we have a proper understanding of the outlook in acute psychoses as compared with mild chronic psychoses. Though the layman often considers the mild chronic psychosis to be the less serious, from the standpoint of recovery, the experienced psychiatrist knows that better results are more often secured in the very acute mental disturbances. It is true that the actions and the appearance of the patient in the severe and acute psychoses are not promising. Such patients often won't eat or sleep, they are very restless, sometimes violent, and are commonly subjected to much restraint and abuse. Patients showing decided symptoms of this sort should be placed under treatment early. It is more important to treat them than it is to classify them in the proper group, because the most striking sort of results can be secured in a large percentage of disturbances of this sort. The final group is that of constitutional psychopathic inferiority. Here moral and social defects are outstanding. The classification has become a sort of "catch-all" one, including such diverse condition as pathologic liars, tramps, criminals and, according to the views of some authorities, sex perverts and drug addicts. The sub-classifications in this group are probably not entirely rational. Recognition of social and moral defects which might later lead to classification under the diagnosis of constitutional psychopathic inferiority, is important. We should be on guard for such tendencies, even in the pre-school period. Training and disciplinary measures may have some effect on such patients. In these conditions, treatment is demanded for the good of society even more than for the good of the individual.

Dr. Harry R. Hoffman, Chicago: I apologize for chief Justice McGoorty's absence, who is detained by a special Grand Jury in Chicago. I have heard some terms mentioned today, crime and delinquency. What do we mean by crime? It is a difficult thing to define. Crime is only one type of behavior. It is oftentimes difficult to differentiate it from any other type of behavior; very difficult. I should say that we have only one natural crime and that is murder and that isn't always a crime. For instance, we declare war tomorrow and some one goes out and shoots somebody; a normal individual mentally, a sane individual, a sane act, and he may receive the Croix de Guerre. In some countries of the world larceny isn't a crime. So we should speak of social behavior. We have been talking today about criminals incarcerated in institutions. The bulk of criminals by far are outside of institutions. The ones that are incarcerated are those incompetent ones that can not hire attorneys. Their mental condition is so low, they are suffering from psychosis or what not, that they are caught and incarcerated.

For twenty years past I have been connected with

the city House of Correction of Chicago where we have eighteen thousand antisocial individuals incarcerated in that institution in a year. I have been out there without a salary, using it for teaching purposes. We know this at the city House of Correction in Chicago, that of this eighteen thousand antisocial individuals in a year fifty-five per cent. have been in that institution one time or more; thirty per cent. have been at the city House of Correction twenty-five to seventy-five times. So you can easily see the large percentage of recidivists. Last October, struck with this idea of the large per cent. of recidivism, I called a meeting of the medical men, of the judges and chief justice of the criminal court and the municipal court at the city House of Correction, and we had seven hundred and fifty at the medical meeting, which is rather a large group. Crime is a very expensive proposition. It is estimated by the National Crime Commission that crime costs the government from eight to ten billion dollars a year. The State of Missouri, by their crime commission, last year, estimated that four million dollars is spent for crime. And Illinois isn't much better than Missouri, so we can figure that Illinois spends from four to five million dollars a year on crime. Next to education it is the most important and most expensive agency of the government. Following this meeting at the House of Correction, through the untiring efforts of Chief Justice McGoorty, the deans of law schools and various social workers, a plan was drawn up through the efforts of Dr. Gerty and Dr. H. Douglas Singer, of Chicago, and was presented to the Cook County Board of Commissioners for a clinic in the county jail. Up to this time, to my knowledge, there has never been any psychiatric advice to the jail in the true sense of the word. A jail is supposed to be a place of confinement for individuals awaiting trial and not sentenced. They have all their rights in the Cook county jail. We have about fifteen thousand prisoners a year. About ten per cent. are there on sentence. Some for major crimes, like failure to pay alimony; some on government charges, liquor charges. But ninety per cent. of the individuals in the Cook county jail are there awaiting trial. They have all their rights. You can not demand an examination of those individuals. As I say, through the efforts of Judge McGoorty and others, the county board arranged a set-up of a clinic and for want of a better name we called it the behavior clinic of the Criminal Court of Cook County, an advisory behavior clinic to the judges of the Criminal Court of Cook County. We do not want to go into the question of responsibility; that is purely legal; but we do believe that we ought to attempt to advise the judges of the type of individual that committed that crime, why did he commit it, what was the social, medical and mental background of this particular individual. And in this set-up we have three psychiatrists, we have a resident psychiatrist in the jail and two other psychiatrists, we have two social workers, which will be augmented by three more very shortly, and we have a psychologist and two secretaries. We have a unit in the jail of thirty-nine cells and to my knowledge it is the first time that a psychi-

atric set-up has been formed right in the jail. All the offices are in the criminal court building. It stands to reason that we can't examine every inmate in the county jail. There are fifteen thousand in a year, and I thought and the committee figured for the first year we would only take up those cases that came up for probation. And as soon as the newspapers came out with a report about this clinic, we received letters from lawyers and mothers stating, "My boy is insane. My father is insane. My sister is insane." And we were so swamped with requests for psychiatric examinations. I doubt whether there is a mother, sister or brother that has some one incarcerated in the jail that doesn't believe that individuals has some mental abnormality. Now, you may know that in Illinois certain cases can not come up for probation. May I read a few lines:

"In Illinois any defendant not previously convicted of a crime greater than a misdemeanor, petit larceny and embezzlement excepted, who has entered a plea of guilty or has been found guilty by the verdict of a jury or by the finding of a jury in violation of the municipal ordinances, or of any criminal offense, except murder, manslaughter, rape, kidnapping, perjury, subordination of perjury, arson, larceny or embezzlement, where the amount taken or converted exceeds two hundred dollars in value, incest, burglary of an inhabited dwelling, conspiracy in any form or any of the acts made an offense under the election laws of this State, may in the discretion of the judge hearing the case after entry of judgment and nothing remains to be done by the court except to pronounce sentence, may be admitted to probation according to the provisions of this act."

Now we thought we were going to act on these cases of probation where the defendant was found guilty and where the judge was in a quandry as to what to do with the individual. The responsibility is over. The individual is found guilty. Should I sentence him or her to the penitentiary or should I put that individual on probation? Should I send that individual to the State Hospital for the Insane or to Chester? Should I send that individual to an institution for the feeble-minded? Those cases were rather simple because we were not bucking up against the proposition of malingering. Here these individuals knew that if their case came up for probation they wouldn't feign any mental illness. As time went on—we were established April 1st of this year—we began to get requests from sitting judges for all offenses in jail. We have had many, many more cases this month. Only yesterday I ran up against the first snag that we had. We had the absolute cooperation of the State's Attorney, the defense counsel, the public defender and the judges. Yesterday morning I had a request from the chief justice to examine an inmate in the jail accused of a very spectacular crime. I went in and told him I wanted to make a mental and physical examination. He said, "I am perfectly all right, but if you want to talk to me, I am perfectly willing." I talked to him about an hour, just before he consulted his attorney; he was taken to court at the termination of

my hour. I went down there later to make a physical examination and he wouldn't leave his cell. He remained mute. Now we are up against the conflict of criminal lawyers. The State's Attorney is willing to cooperate. They want to know the mental condition of the individual without any biased judgment. During the past month the State's Attorney hasn't sought outside psychiatric advice. During the past month we have had five cases showing how this may expedite justice, five murder cases in Cook county where the individuals were frankly insane. The judge empaneled a jury of twelve men, the State's Attorney and defense counsel agreeing. I read my examination to these individuals. They were pronounced insane men and sent to Chester, with this verdict, that this defendant is insane but that if he recovers his sanity he will be remanded to the sheriff for trial. Formerly these individuals remained in the jail six or eight months without trial, these poor unfortunate individuals, but these are cases for the public defender. They have a new office of public defender there. Society is protected. We should have two trials. One we are not interested in, whether the man is guilty or not. That is purely legal; the responsibility is purely legal. But what type of individual committed that offense? If these individuals are frankly insane, society should be protected. We are more severe than the judges think we are. If they are mentally diseased, society should be permanently protected from those individuals. So that these individuals are sentenced to Chester with the order that they be remanded for trial if their sanity is regained.

At the termination of a year I suppose we will have some very valuable statistics and justice will be expedited. In our new jail in Cook county, a seven and a half million dollar structure, the jail is filled. You almost have to make reservations to get into the jail. The city House of Correction is on the same plot of ground as the county jail, and is filled. But, as I say, by far the greater number of criminals are outside of prison walls. When I take visitors through, it looks like an entirely black population. The reason is that the poor unfortunate individuals don't have enough money to hire skillful attorneys or any attorney at all. They are caught in the jam on Madison street and the judge has three or four hundred cases in the morning and they take the police officer's word. "Guilty or not guilty? Sixty days in the House of Correction" or a year in the House of Correction. It is mass production. When they leave after sixty days they get seven cents and are picked up before they get down town. Those are facts. I am quite sure we can make some headway. I am not promising very much but I think we will be of great assistance in a purely advisory capacity to the sitting judges, especially in cases of probation and also in major crimes if we can get hold of the individual before the criminal lawyer gets him. (Applause.)

Dr. Norbury, in closing: I have nothing more to add in particular. I do want to congratulate Dr. Read on the work being done at the Elgin State Hospital. This is an index of what can be done in the other

State Hospitals of Illinois. Unfortunately, all things considered, there is a certain amount of handicap that necessarily follows in an organization and service of that kind. I think Illinois is deserving of the very best of service and should consistently pattern after the old established services that are not controlled by political expediences. Such firmly established services as are found in Massachusetts, New York, New Jersey and in the State in which I at one time was engaged, Pennsylvania. Illinois, in its hospital service, has had trying and peculiar misfortunes in its experiences in trying to establish dependable permanency. For a number of years I have been acquainted with this service and in part, in an official capacity. When we once get established what seems to be a dependable regime, with prospects for accomplishing something worth while, in perfecting an organization and have secured young men with capacity and enthusiasm for such service, lo and behold! here comes a political turn over and the whole thing has to be done over again. Surely we need a broader vision than that of simply building more buildings to house more patients. This is the era of mental hygiene, of prevention, of trained staff medical officers.

(Dr. Norbury's paper was published in October Journal.)

Dr. Meyer Solomon (closing), Chicago: Just a few points. One with reference to the percentage of feeble-minded amongst the delinquent. In the psychopathic laboratory in Chicago, although we get a highly selected group of persons who are suspected of being mentally disordered or mentally retarded, only approximately twenty per cent. were mentally retarded during the year 1930. Figures elsewhere, at the county jail survey in the east by Overholzer and his group, out of about fifteen thousand male prisoners examined, about seven per cent. were definitely mentally retarded and nine per cent. were dull or borderline. Healy and Bronner of Boston found that in four thousand cases of juvenile delinquents about ten per cent. were definitely mentally retarded, showing that the delinquency problem and the mentally retarded are really not synonymous.

One more point. After all, in the courts and prisons we get relatively end-results. The resolution of the crime problem and prevention of delinquency lies not so much in the courts and prisons. It is rather in the pre-court period, the extra court period, the home, the school. We need the development of pre-school mental clinics in conjunction with our ordinary pre-school physical clinics, the development of mental hygiene in the public school system, and we need also the education of parents in better training their children. Of course, the criminological problem is interrelated and interwoven with the social, educational and industrial system, and it isn't the function of the psychiatrist alone. It is a matter for the educator, the psychiatrist, the sociologist, jurists and others, a matter of inquiring into neighborhood conditions, the conditions under which children spend their leisure, the kind of parents and a host of other elements which enter into the situation. The psychiatrist has his particular contribution, but the solu-

tion of the crime problem doesn't depend entirely upon the psychiatrist.

(Dr. Solomon's paper was published in November Journal.)

Dr. Wilgus, in closing: Mr. Charles Armour, the principal of one of our schools in Rockford, made a little study of what became of approximately one hundred of these retarded children of his opportunity classes. According to my recollection, eleven only out of the hundred were committed for having committed crimes. On the other hand, most of the others became self-respecting citizens. I was quite surprised and deeply interested to know that one of the women was in charge of a floor of one of the largest knitting concerns in the city. One of the boys was earning \$175.00 a month and others as high as \$200.00. Mr. Armour made this observation over a period covering six years.

(Mr. Wilgus' paper was published in October Journal.)

Dr. Smith, in closing: Dr. Hamill's talk this morning presents the importance of physical relationships in the problem of mentally deficient children. Blood in the spinal fluid at birth is a fact of great importance. My interest in the relationship of birth injuries has occasioned the examination of a number of infants shortly after birth as well as re-examination over a period of four years. As a result, oftentimes, it was found that the neurological picture shows marked changes at the time of birth, but as years go by many disappear so that many of the cases which are looked upon as primary cases of mental defect are, in reality, cases directly due to a real injury or encephalitis. It behooves, therefore, the average practicing physician, and particularly the family physician, to pay more attention to these trivial changes in the early birth history of babies. Later in life these minor changes may lead to definite evidences of personality defect or deficiency.

A sufficient discussion of the crime facts has been covered by Dr. Solomon's paper. Certain facts, however, do stand out. In 1924 I had an opportunity to make a three months survey with the New York Prison Commission. A definite study of each of these cases emphasized the fact that behavior problems existed not only at the time of the individual's first offense, but existed back into the preschool life of the person. These personality alterations, therefore, undergo alteration, but the essential character remains unchanged. In other words, the child has not made the most of its opportunities. Sometimes these are environmental conditions. There is a definite relationship to physical defects which have an altering influence upon the child's personality. One should not blame the feeble-minded for crime.

Certain studies in New York survey have shown that many of the so-called retarded criminals, upon group examination, are placed there because of emotional and mental factors. One prisoner, upon being beaten in a game of poker, so changed in his intellectual reactions that he finally came out with an intelligence quotient of over 120 and not mentally deficient

at all. To be definitely reliable the examination of the personality of the individual should be made within the individual cell for removal therefrom alters many of his fundamental reactions and we get a misleading diagnosis. It is necessary to get down to the metal plane of the individual if we are to study personality and these can only be gained through obtaining the confidence of the group.

Our studies were made under the most favorable of situations for the authorities at Albany had ruled that any testimony given to our group could not be used against the patient. Information thus received showed how greatly it varied from the facts presented in court. It demonstrated how the social situation of the individual, his environmental relationships, and the facts concerning that particular individual's life which brought him into that particular situation is of utmost importance and are necessary before one can make definite recommendations.

(Dr. Smith's paper was published in October Journal)

THE TREATMENT OF PYELITIS IN CHILDREN WITH B. COLI BACTERIOPHAGE.*

GERALD M. CLINE, M. D.
BLOOMINGTON, ILL.

B. Coli. Bacteriophage Filtrate, according to Arnold,¹ as used therapeutically, usually means "a Berkefeld or similar filtrate of broth cultures of B. coli which have been dissolved by a lytic principle. This material contains the peptone and meat extractives of the broth, the dissolved bacterial proteins (probably unchanged) and a transmissible lytic principle. The protein content of the material must be borne in mind when this preparation is used. The therapeutic effect of bacteriophage filtrates is attributed 1. to the protein of the dissolved bacteria which is in the form of a very readily available antigen, 2. to the transmissible lytic agent, which is capable of dissolving homologous bacteria, 3. to foreign protein shock when the material is injected, or 4. to a combination of the foregoing." He further states "that whatever mechanism may be operative, it is known with certainty that, following the use of bacteriophage, the opsonic index is greatly increased and that all the antibodies that can be produced by the heat killed organisms are also produced by filtrates of bacteriophage lysed cultures."

As far back as 1922 Courcoux, Philibert and Cordey,² and in 1925 Munther and Boenheim,³

and Zdansky⁴ have treated infections of the urinary tract by subcutaneous injections of bacteriophage.

My attention was first called to the therapeutic use of this material two years ago last summer. I had an infant three months of age under my care with what I thought an incurable medical case of colon bacillus pyuria. Everything in the category of medicines was used; in addition the child was given three ultra violet ray treatments, weekly. However, it continued to cry, remained stationary in weight and the urine as passed would be comparable macroscopically to a good grade of milk. Microscopically it contained pus in abundance, too numerous to count. After this child had been under my care for a month or more with no appreciable improvement, the family moved to Springfield, Illinois, where the case was referred to Dr. Blankmeyer. Finding that the urine contained almost a pure culture of colon bacilli he gave a few subcutaneous injections of B. coli bacteriophage which was prepared at the Illinois State laboratory. The improvement was miraculous in that the urine cleared up macroscopically, the child stopped its fretting and crying, the appetite increased and immediately it started to gain in weight. At the end of another month the urine was practically normal microscopically and the child had gained two pounds in weight. I had an occasion to see this child three months later. The urine at this time was entirely free of pus cells microscopically, and a culture was reported negative for colon bacilli. I later reported this case to Dr. Lloyd Arnold of Chicago and he has been kind enough to furnish the material I have used in the following work.

The cases herein reported are a selected group. I selected only the ones that I felt were impossible to clear up under ordinary medical treatment. The number of cases are very few, but my idea in making this report at this time is to call your attention to the subject and stimulate further work in this direction.

I use the term pyelitis assuming that a pyuria in children in most cases is not limited to bladder infection. Only by use of the cystoscope can we distinguish between the two. As we all know pyuria is frequent in children and the majority of cases will respond very nicely to careful medical management. Nevertheless there

*Read before the Section on Medicine of the Illinois State Medical Society, May 7, 1931, at East St. Louis.

is a certain percentage of cases that need come to surgical intervention. Will the use of colon bacillus bacteriophage reduce this number?

For simplicity I have made the following division of cases. The total number treated is fourteen, twelve of which were successful and two unsuccessful. Of the twelve successfully treated cases ten showed a pure culture of colon bacilli and two showed organisms of mixed infections in the urine. Of the two unsuccessfully treated cases, one showed a pure culture of colon bacilli and the other organisms of mixed infections, such as *B. coli*, staphylococci, non-hemolytic streptococci, and diphtheroid bacilli.

PURE CULTURE OF *B. COLI*—SUCCESSFULLY TREATED

Case 1. A girl, aged three and a half years. Admitted to the office September 10, 1930, complaining for six weeks of intermittent fever, associated with painful and swollen joints. Urine contained many pus cells in an uncentrifuged specimen. Diagnosis of an acute rheumatic fever with an associated pyelitis was made. Ordinary medical treatment such as urotropin, pyridium, etc., was instituted to combat the urinary infection. One month later there was quite an improvement in the microscopic picture of the urine and the temperature elevation had subsided. October 24 she returned with a temperature of 106 P. Mother stated that two days before she first noticed an elevation in temperature. The child did not appear acutely ill, but was sent to the hospital for future management. The urine was loaded with pus cells. Culture showed a pure strain of *B. coli*. No medicines were given internally. One-half cubic centimeter of *B. coli* bacteriophage was given subcutaneously at noon. Twelve hours later the temperature reading was normal and remained so thereafter. The following day 1 cc. of the bacteriophage was given, and this dose repeated every other day, making five doses in all. At the end of a week the urine culture was negative. She has had three such negative cultures since then, the last one recorded in February, 1931.

Case 2. Baby boy, aged 7 weeks. Admitted to the office August 8, 1930. Birth weight 8½ pounds. Present weight 7 pounds and 6 ounces. Breast feedings every two hours, alternated with different combinations of cow's milk, Eagle Brand, etc. Temperature 102.6 R, markedly ill and underweight baby. W.B.C. 8,000, R.B.C. 3,000,000 and HGLB 60 per cent. Urine revealed two plus albumin and microscopically it was negative for casts but was loaded with pus cells. Culture showed pure *B. coli*. Six injections of *B. coli* bacteriophage were given in 1 cc. doses every other day. After the third injection the temperature was remaining normal and baby was discharged from the hospital. September 3, three weeks later, weight was 8 pounds 4½ ounces. Urine negative for albumin, but microscopically contained many pus cells. At this time 1 cc. of bacteriophage was given and repeated September 10,

17 and 18. September 10 baby weighed 8½ pounds—a gain of 1 pound 2 ounces in one month. September 27 weighed 9 pounds 10 ounces. The mother's breast feeding was discontinued at the onset and protein milk was substituted. Many treatments of quartz lights were used. Throughout the winter months it was given small doses of serenium at different times. On April 17, at ten months, the child weighed 20 pounds 2 ounces. The urine culture was free from *B. coli*.

PURE CULTURE OF *B. COLI* UNSUCCESSFULLY TREATED

Case 3. Girl, aged one year. Admitted to the office March 21, 1930. Intermittent temperature of three days duration, associated with an upper respiratory infection. Urine, microscopically, loaded with pus cells. Medicinal treatment instituted and temperature returned to normal. She had a stormy convalescence and on April 12 she was still quite fretful, had no appetite and urine was still loaded with pus cells. One pyridium tablet, daily, was ordered one week of each month. Almost weekly examinations of the urine was made, each time finding many groups of pus cells. October 21, 1930, she had another severe attack of pyelitis. The urine contained a trace of albumin, no casts and many groups or clusters of pus cells; culture revealed a pure growth of *B. coli*. One half cc. of bacteriophage was given subcutaneously on October 24 and 1 cc. repeated Oct. 28, November 1 and November 4. On November 21 urine showed only an occasional cluster of pus cells. February 21, 1931, four months later, she developed another head cold and otitis-media and the urine was loaded with pus cells. One cc. of bacteriophage given, increased to 1½ cc. February 24, February 28, March 11 and March 18. March 25 urine showed eight to ten groups of pus cells. Urotropin and sodium acid phosphate given. April 20 five to six pus cells per field, no groups, culture positive for *B. coli*, urotropin continued. The summary of this case reveals that this child was treated medicinally, almost continually, for pyelitis from August 8, 1930, to October 24, 1930, with no appreciable results. After this time she was given ten subcutaneous injections of bacteriophage and to date, April 20, 1931, the urine culture still is positive for *B. coli*. Feeling that she must have some organic urinary obstruction she will be referred to a urologist for further study.

MIXED INFECTIONS UNSUCCESSFULLY TREATED

Cases 4 and 5. One child was 14 months, who was treated with *B. coli* phage at various periods with little success. She now has a chronic nephritis and is improving very slowly. The other case, a child 3 years old, who had an associated nephritis and died of uremia in April, 1930. I did feel, however, it prolonged her life, for she was given the bacteriophage while almost in a moribund state and she lived six weeks longer. Her urine contained *B. coli*, staphylococci and non-hemolytic streptococci.

COMMENT

In one case only was there any general re-

action and that consisted of chills and a secondary rise in temperature within three hours after the injection, which lasted only a few hours. The local reaction consisted only of a slight erythema and swelling at the site of the injection.

From this report my general inferences from the cases cited are that, in the urines that have a pure culture of *B. coli* the results are exceedingly good. In cases that have a mixed infection with *B. coli* predominating the treatment seemingly is harmless and certainly is worth a trial. Where there is an associated nephritis I doubt if there is any value in it, although I feel it might be tried.

The results are still unexplanatory even if good. Perhaps it might be because of the foreign protein reaction such as we have in boiled milk injections, etc., or there may be some split product given off by the lysed bacteria.

SUMMARY

1. Fourteen cases are mentioned in this paper. Twelve or eighty-five per cent. were treated successfully.

2. All of these cases were previously treated with the usual medicinal therapeutic measures and did not respond.

3. We must consider its value in view of the good results despite the fact that we can prove no specific action.

4. The number of cases is too small upon which to base any permanent claim.

5. Since there is no visible harm in its usage, then why not try *B. coli* bacteriophage subcutaneously in the ordinary cases of colon bacillus pyuria and pyelitis that confront us from day to day, which probably may reduce the incidence of surgical proceedings?

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DISCUSSION

Dr. H. S. Maupin (Quincy): I do not think I will have anything to say that will add to the paper, since eighty-five per cent. of his cases that will not respond to medicine respond to bacteriophage. Pyelitis is a very

easy disease to diagnose, but when we come to the treatment of pyelitis we sometimes have difficulty.

We have two types of pyelitis. One is the ascending type, and most of this type occurs in girls, because about 80 or 90 per cent. of the pyelitis cases occur in girl children. The ascending type is the type that will respond very easily to medical treatment. I have always used hexylresorcinol with very good results in these cases, and yet you will get a case of pyelitis with an alkali urine that will not respond to hexylresorcinol. I have written to Sharp and Dohme and asked the cause of this, and they say that it works well in both alkali urine and acid urine, but it does not prove out that way.

The hematogenous type of pyelitis is supposed to be an infection that is taken up by the blood and the bacteria are excreted in the urine. If you get a type of pyelitis that is hematogenous, you have more difficulty clearing up the condition. So I think that probably in this type you will get very good results with your bacteriophage, because you will get the opsonic index and the children will respond more perfectly.

I have used quite a bit of the stock vaccine in pyelitis and have had very good results in some of these cases. I do not think that I have gotten as much as 85 per cent. cured, yet I have had them go over three or four years without any return of the trouble.

I think the reason the Doctor is getting good results with bacteriophage is that he is getting this preparation made by Dr. Arnold and it is a fresh product. I do not think it is so much the foreign protein that he is getting in it, as it is something else in it that is causing our good results. There are different kinds of serums on the market. We have very good houses putting out serums, and I have used them. At one time I thought I would quit using serums, but I happened to take a patient to Chicago to Dr. Frederick Mueller and he recommended that I use a vaccine on this patient. I said, "I don't believe in it very much." He said, "Take this and try it." He gave me a bottle of Sherman's vaccine. I got very good results with it. Sherman's vaccines are sterilized with phenol and not heat. I think that is the reason you get better results with these vaccines than with some others.

* Dr. B. Markowitz (Bloomington): I am inclined to believe that the good results obtained in the use of bacteriophage as shown by Dr. Cline are due to the split products of the organisms rather than the foreign protein.

We have had occasion to make and use colon bacillus and staphylococcal bacteriophage in adults, in which our results were quite satisfactory, particularly in the staphylococcal phage used in chronic osteomyelitis. Some cases seem to clear up miraculously; others don't do so well. We cannot explain why one will and the other will not. As a general rule, we have found that in the infection from which a pure culture of either staphylococcus or colon bacillus is obtained, the use of a phage made from this specific organism will give a high percentage of cures; probably as high as Dr. Cline has had. The use of a colon bacillus phage in

a pure colon infection is attended with very good results. The cases that do not respond very well are those in which there is a mixed infection. If the colon bacillus predominates even in a mixed infection the use of a colon phage may produce fair results. The cases in which we have obtained the best results were those in which we had a pure culture of either colon or staph.

On the whole, as Dr. Cline said, while the colon bacteriophage is not a panacea for all illnesses of the urinary tract and certainly will not respond in 100 per cent. of the cases of colon infection, I think its use is warranted in the cases indicated.

Dr. H. N. Allen (St. Louis, Mo.): My interest in bacteriophage is almost purely that of the laboratory man. From this standpoint I want to bring out a couple of points that Dr. Cline has not particularly mentioned.

In the first place, in the case of colon bacteriophage, it is a very easy matter to produce an autogenous-phage. In chronic pyelitis, it seems to me that it is never necessary to use anything but an autogenous-phage. This is produced from sewage water. As all sewage water has a phage for all colon bacilli emptied into it, it is comparatively easy for us to produce an autogenous-phage for every colon infection. I should like to know whether in Dr. Cline's failures he tried an autogenous-phage.

The second phase is this: I have never seen bacteriophage render any benefit to a patient after the second injection. If we do not get benefits within the first two or three injections, we do not expect results from bacteriophage.

We have a very interesting laboratory experiment which shows us the danger of using more than two injections. If you will take the staphylococcus from a guinea-pig's skin, an organism which is perfectly harmless to that guinea-pig, and produce an autogenous-phage and inject the guinea-pig with that autogenous-phage, you will find that after seven or so injections the guinea-pig will die from staphylococcic-septicemia, as a result of this previously harmless bacteria. We have presumably a case of that in our hospital, I am sorry to say. It was a case of an infection of the foot. The patient was benefited by one injection of the bacteriophage, and the surface changed so completely and the doctor was so pleased with the results that he made seven or eight other injections of this bacteriophage, with the result that the infection spread and the patient's leg was amputated at the hip. The terrific extent of this infection was possibly due to the repeated injections of bacteriophage.

My experience clinically, as far as babies are concerned, is with one case of staphylococcus-meningitis, which we ordinarily consider as having a very poor prognosis. A large dosage of bacteriophage was given intravenously. We advised that it should be given intraventricularly, but 25 cc.s were used intravenously, with the result that the baby woke up twenty-five hours later, called for his milk, and held it down, and at the

present time is perfectly normal. That was eight months ago.

From the laboratory standpoint I would suggest only the use of a fresh phage. A proprietary phage seems to be of little value after it has stood around a while. Whenever possible, I would suggest the use of an autogenous-phage.

I would like to digress a moment from pediatrics to one other use that we have of colon bacteriophage—that is, in cases of peritonitis. We have had some beautiful results with generalized peritonitis.

In East St. Louis, Granite City, and along the east side of the river, it is not uncommon to be called out in the middle of the night because somebody has been shot a number of times through the abdomen. These cases ordinarily go on to a peritonitis and a lot of trouble. A surgeon in Granite City at the present time says that he thinks that after this he is going to close up abdomens completely instead of draining them, because during his operations lately he has sewed up the holes in the intestine, poured bacteriophage into the peritoneum, and he has had so far in some ten cases a 100 per cent. lack of peritonitis in these cases. The application of a mixed staphylococcus and colon bacteriophage in the peritoneum at the time of operation has apparently produced wonderful results. Now, the bacteriophage that is used is not only a bacteriophage, as the Doctor has brought out, but it is also a very highly soluble vaccine. It is a solution of this bacteria in the growth together with all the bacterial products as they grew. This is very close to the anti-virus of Besredka, an almost identical product. So the effects that we get with bacteriophage may simply be the same effects that Besredka claims he gets with his anti-virus. I don't believe this, but it may be true.

Dr. Gerald M. Cline (Bloomington): Thank you gentlemen for your liberal discussion. I am particularly glad to hear from Dr. Allen.

I will admit that the results that I have obtained from the use of bacteriophage seem too outstanding. These facts must be kept in mind because it is easy to become too enthusiastic over its use.

I did not mention the use of bacteriophage in kidney and bladder irrigations which some men are doing. This entails surgical procedure which I am trying to avoid. It is particularly for this reason that I bring the hypodermic use of this material to your attention which may easily be carried out in an ordinary office practice.

At this time I am treating one case which I did not report. It is of a mixed infection staphylococci and *B. coli*. We are using a mixed phage in this case, and the results at the time I left were very good, but, of course, I have not had time to follow it up long enough to know what the end results are going to be.

In answer to Dr. Allen, I have not used the autogenous-phage as mentioned, the material I used was a stock phage furnished me by Dr. Arnold, whom I am sure feels that since there is such a debatable point as to just what it does and what it is, that he is not committing himself on whether he thinks the autogenous-phage has any benefit over the stock phage.

It seems to me Dr. Allen has given the keynote as to the number of injections to use. This has not occurred to me. However, in applying this to my cases, I remember that all the successful cases did react favorably after the first injection and you will remember that one of the unsuccessful cases had in the neighborhood of ten injections with no results. I am mighty glad to have this suggestion and word of warning from Dr. Allen.

I was also interested in the Doctor's report of the case of staphylococcus meningitis. I had such a case a few months ago that terminated fatally. It never occurred to me to use bacteriophage. I believe I will be tempted to use it if such a case presents itself.

In conclusion again, I will say that I do not claim anything new in what I have given you. You have heard the results which probably will stimulate more work in this line, particularly among the general practitioners who no doubt see more pyurias than the specialists. I do not feel that I have done any harm so far by its use and furthermore feel it is worth a trial in the ordinary cases we see from day to day. If it does prove valuable certainly we will reduce the incidence of surgical procedures.

ERRORS IN DIAGNOSIS OF HYPERTHYROID DISEASE*

I. EDWARD BISHKOW, M. D., F. A. C. S.

CHICAGO

Notwithstanding the voluminous literature on the subject of hyperthyroid disease and its frequent discussion in medical assemblies, it is surprising to still find a large number of thyrotoxic patients who make the rounds of clinicians for years, under erroneous diagnoses of neurasthenia, heart disease, tuberculosis and many other chronic and wasting diseases.

The early diagnosis of hyperthyroidism is without question the single most important factor in the thyroid problem considering our present knowledge of the disease. The condition is a steadily progressive disease and results in far-reaching and irreparable damage to all organs and systems of the body, but especially to heart, kidney and nervous systems.

Recognition of the existence of hyperthyroidism therefor, permits for no temporizing, as there is almost unanimity of opinion that surgery offers the best and most prompt arrest of disease and its effects. This should be resorted to as soon as the patient can be properly prepared. The management of the hyperthyroid, preoperatively, the operative technique and the

postoperative care, have become almost standardized; however, a disease which is so prevalent and resembles and is mistaken for other conditions so frequently can be profitably studied from the standpoint of diagnosis.

Errors in diagnosis of hyperthyroid disease are made less often in the acute case than in the more slowly developing forms. The acute hyperthyroid patient presents a train of striking symptoms and signs which offer little difficulty in recognition.

The skin is hot, moist and flushed, there is a rapid pounding heart, and a full bounding pulse. There are rapid ceaseless movements of the body, a high nervous tension, and the patient gives vent to emotional outbursts. A tremor of the tongue and hand can be detected. Exophthalmos may be present or what is more frequently observed, a staring expression of the eyes caused by the infrequent winking and widened palpebral fissure. The presence of a thyroid enlargement on inspection or even on palpation is not essential to a correct diagnosis, but a basal metabolism determination will show an increased metabolic rate.

It is in the case with insidious onset and the borderline case that errors in diagnosis most often occur.

Usually in this type of the disease, there is a history of poor health, and a tendency to "nervous breakdowns" dating back for some years. A state of fatigue exists and there is a progressive loss of weight in spite of a good appetite. Only one other condition presents the combination of increased food intake and loss of weight, diabetes mellitus, and the differentiation can be readily made by a blood chemical examination and urinalysis.

Even early in the disease and in the mild forms palpitation is present. Palpitation may present itself at any time, even when the patient is in complete repose. Parenthetically (it may be well to consider hyperthyroidism when a case of paroxysmal tachycardia is encountered, and a metabolic test done.)

The pulse pressure is higher than normal. The diastolic reading is uniformly lower, the systolic may be normal or slightly elevated. Aortic regurgitation is the only other condition which shows an increased pulse pressure, and in this condition the murmur at the base of the heart, diastolic in time, the presence of a

*Read before Alumni Conference, University of Illinois, June 12, 1931.

capillary pulse and Corrigan pulse and the fluoroscopic tracing will establish the diagnosis.

The characteristic stare of the eyes which was mentioned, is noted frequently in this group and in my experience has been the single finding which directed my attention toward a correct diagnosis, most often. Clute and Adams failed to find a goiter palpable in over 50 per cent of borderline cases.

The condition most frequently confused with hyperthyroidism, is neuro-circulatory asthenia. One of the outstanding differences in these two conditions, is the mental viewpoint.

The neurasthenic is pessimistic about his condition, non-cooperative and sluggish in his movements. The hyperthyroid is optimistic, alert and quick in his movements, speech and response.

Both complain of weakness and fatigue. The asthenic patient makes little effort to overcome this weakness, the hyperthyroid extends himself beyond his strength. This has been used as an important diagnostic aid. Quadriceps muscle weakness is a common finding in the thyrotoxic patient. If he is made to sit on the edge of a chair and told to extend his leg and thigh at right angles to the body, he will raise the extremity with difficulty and as it sags, will force it up and lacking strength to keep it up, slowly lower it. The asthenic patient asked to perform the same test, will make a weak effort to raise the limb, and permit it to drop like a dead weight.

The neuro-circulatory patient complains of lack of appetite which is not borne out by his appearance. As a rule he is well nourished, in contradistinction to the progressive loss of weight in the thyrotoxic case.

While it is true that the finding of an increase in basal metabolism does not always mean hyperthyroidism (we recognize that positive readings are encountered in polycythemia, leukemia, cardio-renal disease and in febrile states); a plus 20 or more will lead to the discovery of other signs and symptoms. Our viewpoint toward this aid in diagnosis should be somewhat similar to our attitude to the x-ray as a confirmatory aid, and considering the irreparable damage that the unrecognized case does, the more frequent use of the metabolism test in doubtful and vague cases can be of inestimable value.

Many cases are diagnosed as rheumatic or hy-

pertensive heart disease which in reality are cases of thyrotoxicosis.

A loud, thumping sound at the apex has been described as pathognomonic of the thyroid heart. I have not been able to substantiate this. Hyperthyroidism causes little if any cardiac enlargement. Some hypertrophy may result from a long standing tachycardia, but the toxemia apparently causes no enlargement.

The greatly enlarged heart with or without decompensation, with evidence of mitral stenosis and aortic regurgitation, will disclose a rheumatic history on inquiry.

The hypertensive heart case occurs in patients over 40, the basal systolic pressure is over 150, frequently there is an hypertrophied left ventricle and there may be kidney changes as shown by the blood chemistry and retinal vessel changes.

In our experience, the differentiation between the thyrotoxic heart and organic heart disease due to rheumatism and hypertension is best determined by the therapeutic test.

Thyrotoxic tachycardia is not influenced by rest and digitalization, the rheumatic and hypertensive hearts are definitely benefited and slowed up by this therapy, or if the nephritic signs predominate, by the addition of diuretics.

Conversely, under lugol therapy the tachycardia of the thyroid case is quieted, even with the patient up and about, but has no influence in the other types.

The Goetsch adrenalin test has been of no real assistance in the borderline case.

True cases of hyperthyroidism have come to our notice which have been diagnosed tuberculosis, diabetes, psychosis and asthma.

In this connection it may be well to remember that a concomitant disease may be present with hyperthyroidism, but care should be used not to confuse a substernal gland producing pressure symptoms on the trachea, with asthma, nor fail to appreciate that the nervous instability of the hyperthyroid may be of such intensity as to approach a state of insanity.

The operative work in these two types of cases has been especially gratifying from the standpoint of relief, in cases considered beyond medical aid, in view of erroneous diagnoses.

The transition of a simple adenomatous thyroid to a toxic thyroid can frequently be accurately traced. We have seen a number of cases first show signs of activity, following severe

mental strain, fright, shock and worry. This may also happen after an acute infection, such as tonsillitis, pneumonia or diphtheria.

Thyrotoxicosis should suggest itself if after an acute infection the convalescence is prolonged and the patient complains of marked exhaustion, especially if the pulse remains rapid even with complete rest and with a normal or subnormal temperature. On several occasions we have encountered such cases, and further study invariably showed a high pulse pressure, tremor and a positive basal metabolism test.

The incidence of hyperthyroidism and pregnancy has received much attention, and there exists much diversity of opinion as to etiology and management. Many take the position that hyperthyroidism is present in this group prior to the pregnancy, and that pregnancy does not intensify the disease. From our observation of a fair number of these cases we are convinced that irrespective of the presence or absence of hyperthyroidism before pregnancy the symptoms of thyrotoxicosis found in cases of pregnancy, become more marked as pregnancy progresses. Some of these cases can be successfully carried to term; however, with increasing symptoms a decision must be made whether to empty the uterus or perform a thyroidectomy to arrest symptoms and protect the mother. We have usually chosen the thyroidectomy done under local anesthesia, and have had the good fortune to see the pregnancy continue uninterruptedly to term.

No hard and fast rules can be laid down for the detection of the insidiously developing toxic thyroid. In no case are all symptoms enumerated, present, however if the clinician will be thyroid conscious and be watchful for the characteristic signs, of which those most commonly present are, loss of weight in spite of plentiful food intake, tachycardia, high pulse pressure and eye stare, a correct diagnosis and proper management will result.

Conclusions:

1. Errors in diagnosis are most frequently made in slow developing and borderline cases. Hyperthyroidism most often is confused with organic heart disease and neurocirculatory asthenia.

2. Irreparable damage to the viscera can be avoided by the early recognition of thyrotoxico-

sis. The treatment is accepted generally to be subtotal thyroidectomy.

3. The history of onset may be an important diagnostic aid. Exhaustion which is prolonged following an acute infection or after severe mental strain, associated with tachycardia when at rest, should call for a metabolism reading.

4. A consciousness of the widespread prevalence of hyperthyroidism often with few but characteristic symptoms, will result in its more frequent detection.

310 S. Michigan Ave.

REPORT OF A CASE OF RECURRENT HEMORRHAGES INTO THE VITRE- OUS. (EALES DISEASE?)

W. R. FRINGER, M. D., F. A. C. S.

ROCKFORD, ILL.

On October 6, 1909, a vigorous, athletic boy of sixteen, whom I had previously known, came into my office complaining that he could not see. Vision right eye was 20/200ths, left eye fingers at one foot. He lived in a village thirteen miles distant and was starting his junior year at Rockford High School. On the previous Labor Day he discovered that while catching behind the bat he could not judge the ball. A month previous, while also catching behind the bat, he was struck on the left temple by a ball, knocked down, got up and finished the game. The ophthalmoscope showed chorioretinitis more advanced in the left eye, without exudates in either eye. Without comment on his condition, I immediately sent him to see the late Charles H. Beard. I wanted his unbiased findings and advice.

The family consisted of the father, an older brother and sister, all in good health. The brother wore very strong compound plus lenses. The mother died in 1900 of pernicious anemia. Three months before her death she was delivered at full term of twin babies. They lived only a short time. No miscarriages. The Wassermann and von Pirquet tests made at the Maxmillian Herzog Laboratory were negative. The blood and urine findings were normal.

On October 9 I received the following report from Dr. Beard: "The clinical picture as given by the ophthalmoscope resembles nothing so

*Read before the Section on Eye, Ear, Nose and Throat, Illinois State Medical Society, at East St. Louis, May 5, 1931.

much as that of a severe acute chorioretinitis, which is most often of syphilitic origin. Do you suppose the boy could have syphilis? I would suggest high and progressive dosage with iodide of potassium and pilocarpine sweats, in a hospital. To this could be added inunctions of mercury. This last could do no harm and might do a world of good."

He was hospitalized and pilocarpine sweats with increasing doses of iodide of potassium were given. He almost immediately had a hemorrhage into the vitreous of each eye. His vision was reduced to the projective of light. The pupils were non-illuminative. The sweats and iodide of potassium were continued alternating with mercurial inunctions. On the last of October he was again seen by Dr. Beard who advised continuing the treatment. On November 30 the left pupil was dilated. At the request of his father he was seen by Dr. Casey Wood. At the suggestion of Dr. Wood on December 3 he was given subconjunctival normal salt injection, which caused a great deal of pain and was not repeated. On December 5 there was pain in left eye and plus tension—secondary glaucoma, which was controlled by hot applications, morphine and eserine. Tension right eye minus. He went home January 31, 1910, having a vision of 20/70ths minus one in the right eye and not perception of light in the left. The ophthalmoscope showed in the right eye a diffuse red haze, the disc could be made out indistinctly. The left eye nil. All medication was stopped. March 1, 1910, the vision in the right eye had risen to 20/50ths minus one. He was given 1/40th grain of strychnine three time daily for two weeks. April 11, 1910, he was readmitted to the hospital and for a week was given pilocarpine sweats. April 22 vision in right eye was 20/40ths minus one. May 3 he was given 1/4th grain protiodide of mercury three times daily for three months. September 12 he went to see Dr. Wood who was out of the city. He saw Dr. Frank Allport of the same office who wrote me as follows: "The left eye has been and is not. The right eye looks good on the outside, there is a good pupillary reaction, and there is no tension. His vision I find to be 20/40ths and can be increased to 20/30ths by — 0.75 axis 90. I have taken his field of vision and find it to be fairly good, notwithstanding the fact that the ophthalmoscopic examination shows a pretty

badly disorganized fundus. I find his vitreous to be rather hazy, the outlines of the disc indistinct, a good many choroidal tears and a good many choroidal and retinal exudates."

October 4, 1910, about noon, he could not see out of the right eye, fingers poorly at one foot, red condition of fundus, but cannot make out any detail. Sent to hospital. Pilocarpine sweats begun on 5th and continued to 14th. Then mercurial inunctions and potassium iodide to October 24, when he could see better and the haze was not so dense as shown by the ophthalmoscope. Sweats again for a week when he went home November 2 with a vision of 20/40ths. Hospitalized again on December 6 and given sweats for eight days, at the end of which time he went home with a vision of two letters in 20/40ths. December 29 had a slight hemorrhage and his vision dropped to 20/70ths. Under 1/4 grain protiodide of mercury three times daily his vision soon returned to 20/40ths minus one. He was kept on protiodide of mercury until July 17, 1911, when his vision was 20/40ths. September 11, 1911, his vision was 20/30ths. Left lens had become opaque.

January 17, 1914, everything was hazy before right eye. Counts fingers at two feet. Ophthalmoscope shows red glow with white spot deep in the fundus. Was given pilocarpine sweats alternating with inunctions and potassium iodide to February 24 when his vision was 20/40ths. Ophthalmoscope showed the fundus slightly hazy with white membranous-like patch slightly below center in vitreous, and also a large black splotch to nasal side. These changes in the fundus were seen with plus eight. His temperature for several days had been slightly below normal. He was given four pilocarpine sweats to February 28 when he went home and was again put on protiodide of mercury. March 7 his vision had risen to 20/30ths.

May 15, 1914, he had another hemorrhage into the vitreous, was sent to the hospital and given sweats alternating with inunctions and iodide of potassium to June 5 when his vision was 20/100ths. Could not get any detail of the fundus. The deep white spot that had been in its present location had a black stringer attached to it and the stringer floated. He was given pilocarpine sweats to June 10 when his vision was 20/50ths slowly. Was unable to get any detail of fundus. If there was any change the black

stringer was more dense than at previous examination, and bifurcated at the distal end. Pilocarpine sweats were continued to June 20, inclusive. Fundus had a diffuse red haze—could make out some of the blood vessels, black stringer still in evidence, obscuring the fundus to some extent. Much to my surprise he read 20/40ths and some letters in 20/30ths. He went home June 20, and potassium iodide was prescribed. June 27, 1914, his vision was 20/30ths. His hemoglobin was low, coagulation time rapid. Freshly prepared Bland's pills were given. July 8th ophthalmoscope showed floater contracted in size—looked like a thread with end enlarged, not so free to float as originally. Saw occasionally until March 10, 1914, when vision was 20/30ths plus. The floater had developed a larger head and was bent down toward the retina, seen with a plus 7.

January 11, 1917, while lifting, patient fell, striking back of his head on ice. Had a hemorrhage into the vitreous, was sent to the hospital. Ophthalmoscope showed red haze, but could make out disc and blood vessels indistinctly. Potassium iodide was ordered. January 17, vision was 20/30ths minus 2. Went home on that date. January 30th had a slight hemorrhage. Advised bed rest and continuance of potassium iodide. February 3 the ophthalmoscope showed a slight flame shaped hemorrhage from a vessel in the white spot previously mentioned. This white tissue moving out toward the temple side in a semi-transparent membranous streamer, retinitis proliferans. Hemoglobin was low and coagulation time very slow. Was given freshly prepared Bland's pills and calcium lactate for five days. February 26 was sent to the hospital and given sweats to March 7 when his coagulation time was normal. He went home on that date with a vision of 20/30ths. This was the last of five massive hemorrhages into the vitreous that he had, the first October, 1909, the second October, 1910, the third January, 1914, the fourth May, 1914, and the fifth and last January, 1917.

At the present time his vision in the right eye is 20/30ths, slightly improved with — 050 ax 180, which he does not wear. The fundus is normal save some bands of choroidal atrophy and pigment proliferation in the lower periphery, extending toward the nasal side, also a small patch of retinitis proliferans. This patch has none of the usual fibrous white tissue in it but resembles

a tuck in the retina, starting from a round spot of pigment on the disc situated between the center of the disc and the nasal edge. This tuck is about a millimeter and a half high and extends forward and downward five or six millimeters. I am sorry that I am unable to show you a picture, but I could not find a fundus painter like the late Margaret Washington and I do not think a photograph would be satisfactory. I was timid about attempting it on account of the necessary bright light. The left eye has a tremulous opaque lens, aside from the white pupil and the fact that it is a blind eye, it causes him no annoyance.

I was unable to find in the fundus any indication of the source of the hemorrhages. According to Collins and Mayou they must have come from the ciliary vessels. The vitreous was filled with blood, resembling a dense red fog, which gradually lifted as the blood was absorbed.

At this late date I do not know the etiology of this case. At the time all who saw the patient were inclined to think that syphilis was a cause. I am now satisfied that there was never any syphilis in this family, either congenital or acquired, nor any tuberculosis. The father is well at 67. The patient is married and the father of two healthy children. The sister is married and the mother of two healthy children. The brother was recently married, but is physically and mentally strong enough to draw a yearly salary of fifty thousand with a bonus from one of the large automobile companies.

The first case of this sort was described by von Graefe in 1855. In 1880 Eales published a much more extensive description and it often bears his name. Quoting from Foster Moore. "The points upon which Eales laid especial stress were the occurrence of epistaxis, constipation, bradycardia, the pulse rate being habitually below sixty, dyspepsia, headache, lassitude and lack of energy; syphilis is not a cause." This patient was not constipated, did not have nosebleed nor a slow pulse, was of an energetic, athletic type.

Dr. Wm. Zentmayer in a paper read before the New England Ophthalmological Society in 1920 thinks that the "adrenals may be a cause, whether acting independently or in conjunction with tuberculosis." In the discussion of a case of this sort in 1923 he stated his belief that this condition probably has an endocrine origin as ex-

pressed in Boston some years ago and has been accepted by Friedenbergl, Wilmer and others.

In 1921 Finnoff read a paper before the American Ophthalmological Society on "Recurrent Hemorrhages into the Retina and Vitreous of Young Persons," reporting five cases of his own and 110 in the literature. He concludes that tuberculosis of the retinal vessels, especially the veins, is one of the common etiologic factors. In the discussion of a paper on the same subject in the following December he says, "I have recently had three cases which I have proven not to be due to tuberculosis."

Dr. Chas. A. Young read a paper before the Academy in 1929 in which he states that he has been able to find 69 additional cases not including three of his own since Dr. Finnoff's paper. He considers that calcium deficiency should be kept in mind as a possible cause.

Ellett, Godwin and others report focal infections as the cause. My patient reported having had toothache for a day and a half. A dentist did not find any pathology. His teeth are rather badly decayed. Two years ago he had them x-rayed and one was removed. He has his tonsils. A competent laryngologist sees no indication for their removal. At that time we did not search for focal infections as we do now.

I have three reasons for reporting this case—first, it is unusual, which is self-evident.

Second, I saw this case before the hemorrhages began. The fundi showed a decided pathologic condition—chorioretinitis. The reported cases were seen after the hemorrhages had taken place. Then when the blood had cleared, the ophthalmoscope usually showed a detachment of the retina or a retinitis proliferans. Achilles Davis reported a case that showed patches of chorioretinitis.

Third, I want to emphasize the treatment with pilocarpine sweats. Dr. Wm. Zentmayer pertinently states, "The treatment resolves itself into an attempt to prevent the recurrence of the hemorrhages and to bring about the absorption of the extravasated blood." It is very difficult to know how to proceed to prevent the hemorrhages when the etiology is so doubtful. These patients, however, should have the advantage of repeated laboratory examinations and careful clinical observation and an effort made to correct any deviation from the normal. In 1906 Dr. G. H. Burnham of Toronto published a little book entitled

"The Combined Treatment in Diseases of the Eye," in which in these obscure cases he advocated the prolonged and persistent use of pilocarpine sweats with slight intermissions, together with the internal administration of potassium iodide and mercury. I realize that it is empiric, but I believe pilocarpine sweats are efficacious in stimulating the absorption of these hemorrhages.

DISCUSSION

Dr. Harry Woodruff, Joliet: In this case reported by Dr. Fringer there is a history of several injuries. Whether that removes the case from the category of spontaneous hemorrhage I am not sure, but I think the history of injury should be taken into consideration. It is not unusual to see, after a concussion to the eye followed by hemorrhage into the vitreous or anterior chamber, a number of recurrences after the blood has partly absorbed.

I understand that this patient had a visible lesion in the fundus before he had any known hemorrhage. Could he have had a previous hemorrhage at that time? Some times these hemorrhages may occur without the individual knowing about it. I have a case of retinitis proliferans upon which I could get no exact history as to when the original trouble came about, and I have rather ascribed it to a hemorrhage about which he was unable to give any history. I think the authorities mostly believe tuberculosis to be the most frequent cause. Wilmer at Johns Hopkins Hospital has written quite a little on tuberculosis in these conditions, and if he has nothing else to go on he treats them with tuberculin even though he cannot prove it is the cause. I have done so myself with satisfactory results. Of course I do not prove anything, but I have the results.

I have also had results with autogenous vaccines from the teeth and tonsils. I do not want to stir up any discussion on autogenous vaccines, because I know that certain authorities think there is nothing to them. I believe large doses of calcium lactate is worth while. There are four well proven methods of treatment—antiluetic, though I believe lues is a very infrequent cause. The prevailing opinion at one time was that lues was a very frequent cause of eye disease. We do not now believe it to be the important factor in these cases. I do not believe the hemorrhages you speak of are often due to syphilis. Tuberculosis we have referred to as a frequent cause; calcium deficiency in the blood; and focal infections I am satisfied in older people—though just where the border line lies between young and old it is hard to say—are frequent causes.

Dr. Arthur J. Bedell, Albany, N. Y.: Dr. Fringer can be assured that taking a fundus photograph is not detrimental to his patient.

I was very glad to hear the description of a case that had been observed for such a long time. We might have had more information regarding the condition of the patient, who I am inclined to believe had tuberculosis. If Dr. Fringer could recall the appearance of the fundus when he first saw the case, he might have

seen the typical lesion. I refer to a peculiar translucency which is common in tuberculous choroiditis. It is also very difficult to sharply focus on the individual tubercular lesion. Later when the blood vessels have ruptured, there is a brilliant reflection from the whole area. This sheen seems different from anything else that I have seen.

I tried to listen closely to what was said about pigmentation so as to judge if the patient had a traumatic retino-choroiditis. There is always a migration of pigment in certain parts of the fundus which is characteristic of injury.

If Dr. Fringer had the case today he would treat it differently. I certainly would not use pilocarpin, mercury and iodide but would try tuberculin tests and not stop with one von Pirquet. The fact that the boy was physically strong and healthy has nothing to do with ocular tuberculosis for we find it not uncommonly in those who appear unusually well.

Dr. W. R. Fringer, Rockford: I saw Dr. Bedell smile when I said I was timid about the photograph. I admit, Dr. Bedell, that I was afraid of the photograph. If anything should happen to that eye, to the patient it would have been due to the taking of the photograph.

It was two months, according to the best of my knowledge, from the time of injury until I saw him. There was no evidence in the vitreous or media to show there had ever been a hemorrhage there. I thought it due to syphilis; I never saw anything that made me think it was tuberculous. All the authorities that I came in contact with said tuberculosis was a cause. No one mentioned Eale's disease. He may have been tuberculous. All his family at the present time are in good physical condition. The mother died from primary anemia. He was a strong and muscular boy, not fat but rugged.

I did not know as much about tuberculosis then as I do now, and I do not know much now. I did not know what the etiology was, and I do not know now. The various men who report these cases do so under a very indefinite classification. The boy has a good eye and I hope he will keep it. I am very glad to have had the kindly criticism you have given me.

THE OUTLOOK FOR THE ALLERGIC PATIENT*

SAMUEL J. TAUB, M. D.

CHICAGO

The allergic diseases are seldom in themselves fatal, yet from the standpoint of prolonged suffering and loss of time from work, these ailments assume considerable importance. Particularly is this true of bronchial asthma and hay fever. I shall consider first bronchial asthma.

Asthma, while not necessarily a fatal disease, is often followed by complications such as bronchiectasis and emphysema which render the prognosis almost hopeless in so far as cure is concerned. Up to twelve or fifteen years ago the hope of cure or relief from the symptoms of asthma were practically nil. In the last fifteen years considerable progress has been made in the knowledge of this disease, especially on the basis of hypersensitiveness. With the use of our present day knowledge of asthma, the majority of patients can be relieved and a large percentage cured. Although the results are still far from perfect, they are certainly gratifying when compared to the results obtained in other chronic diseases, such as heart disease, nephritis, diabetes, tuberculosis and so forth. It is hoped that the future will still further improve our knowledge and results. There are certain factors which make prognosis more favorable, such as the onset of asthma early in life, the finding of a definite cause and early treatment. Unfavorable factors are a late onset in life, particularly after the age of forty, and complications such as chronic bronchitis, bronchiectasis, emphysema and heart disease. Aside from these factors, the outlook for the asthmatic patient depends on the following conditions: 1. A thorough knowledge of the subject of allergy by the physician; 2, a thorough investigation of the patient; 3, the completeness of the treatment, and 4, the cooperation of the patient.

First, a thorough knowledge of the subject of asthma is essential. I do not wish to discuss this in detail here but will merely try to emphasize a few points. The physician should primarily have a good general training and experience in internal medicine. In other words, he must be an able diagnostician. He must, then, have special knowledge pertaining to allergy. In this field there is much to be learned and considerable experience is necessary in evaluating the various substances causing sensitization and where they are found. More than one factor may operate in the causation of an attack of asthma. The constitutional or hereditary factor is usually present first, allowing the patient to become sensitized. The second factor necessary is the presence of the exciting substance, such as dog hair, for instance. The patient may still be free from symptoms until the third factor, the non-specific cause, is pres-

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ent. The latter may be thermal, as cold air, infections such as sinus disease, bronchitis, coryza; mechanical, such as nasal polyps and dust and nervous influences.

A thorough investigation of the patient is of the utmost importance. A complete history, particularly of allergy in the family, is important, the character of the attacks and their time and season, the presence of pets in the house, dogs, cats, birds, kinds of pillows and bed covering, mattresses and exposure to various other things in the house as well as the occupation of the patient. The physical examination corroborates the diagnosis of bronchial asthma and we must be careful to rule out such diseases as a chronic nephritis, cardiac disease, tuberculosis and chronic bronchitis.

Asthmatic patients should have routine tests, as complete blood counts, urinalysis, Wassermann and sputum examinations. X-ray of the chest should be done routinely to rule out complications as bronchiectasis and emphysema. Often blood chemistry and basal metabolic rate determinations are necessary. After these preliminary procedures have been done, we are ready for the most important investigations of all, which are the skin tests. There are two methods in use for performing these tests: First, the cutaneous or scratch test which consists of making small linear cuts into the epidermis about one-eighth inch long and one inch apart, care being taken not to cut deep enough to draw blood. The forearms are usually selected for the scratches but the back and thighs may also be used. A Graefe eye knife or any dull scalpel or even a large needle can be used to make the scratches. A small amount of powdered protein is then placed on each scratch with the flat end of a tooth pick and a drop of tenth normal sodium hydroxide is placed on the protein and rubbed in with the sharp end of a tooth pick. It is allowed to dry and after twenty minutes is wiped off with water and the reactions are read. The second method is the intracutaneous or intradermal test which is done by injecting .05 c.c. of the dissolved protein into the skin and raising a small wheal. This method is used when the scratch tests are all negative and in patients suspected of pollen, dust, animal emanations and other miscellaneous sensitizations. Fatal results occasionally occur with the intradermal tests, especially in asthma and hay fever patients who are

extremely sensitive, or severe systemic reactions may occur. Therefore, it is not wise to use this method as a routine measure.

A third method which can be used to determine hypersensitivity is that of the passive transfer technic. Blood is withdrawn from the patient and centrifuged at high speed. The serum is injected intradermally in a non-sensitive individual and skin tests are made over these areas. A positive test consists of an urticarial wheal or, at times, an erythema occurring usually within five to thirty minutes. Delayed reactions may occur eight to twelve hours later, particularly in food hypersensitiveness. It requires considerable clinical experience to interpret and evaluate the tests as a guide to treatment. Many times false positive reactions may result which have no bearing on the cause of the attacks. Often a patient will give a negative skin test with substances to which he is actually sensitive. Tests often have to be repeated on account of negative or refractive phases. When tests are completed, clinical trials must be made and the value of the test confirmed. In some cases we have to resort to conjunctival and intranasal tests. About 250 of these proteins, exclusive of pollens, are available for testing each case of allergic disease.

In a previous communication I reported an asthma caused by canary feather protein and several cases of eczema caused by silk. These cases emphasize the importance of making a sufficient number of tests on each patient and not just testing for the more common substances. By multiple sensitization we mean sensitization to any two or more unrelated substances. Patients who react to timothy pollen usually react to other members of the gramineae group, as red top grass, June grass, orchard grass and so forth. Likewise, patients reacting to the pollen of ragweed will usually also react to other members of the compositae, as giant ragweed, sunflower, cockle burr, and so forth. Brown calls these "group reactions" and they are due to a similarity in the structure of the protein molecule. A person may be sensitive to some protein, such as a food with which he comes in frequent contact and yet remains free from symptoms. Peshkin and Rost and Rackemann have found that about ten per cent. of children without symptoms of allergy are sensitive to one protein or another. They are allergic but in

equilibrium and the terminology "balanced allergic state" has been advanced by Vaughan. The tissues are able to handle a given amount of the allergen without upsetting the allergic balance. Desensitization from eating small amounts may be a factor. An overdose of allergen will upset the equilibrium with onset of symptoms. Hay fever, asthma, urticaria and eczema cases frequently show multiple sensitiveness.

Complete treatment is of great importance. We can be of considerable help in the preventive treatment. Since about 30 per cent. of hay fever patients develop asthma and since pollen treatment is very effective in the prevention of pollen asthma, the prophylaxis of many asthma cases is apparent. Eczema and bronchitis in childhood frequently terminate in asthma and can be prevented if diagnosed and treated early. In the presence of a history of a hereditary tendency to allergy, exposure to dogs, cats, horses and feathers should be avoided. Palliative treatment is used while the investigation is in progress and where other methods fail. Adrenalin 1:1000 from 5 to 15 minims is the drug of choice in relieving an asthmatic attack. The dose must be adjusted to the individual and the severity of the attack. Pituitrin in 5 to 15 minim dosage may be combined with the adrenalin and a more prolonged action seems to be obtained. Ephedrin has the advantage in that it can be given orally and the effect is more prolonged but its action is not as certain. For the best effects it should be given before the attack is expected, especially if it occurs regularly during certain times of the day or very early in the attack. Other drugs which are useful are apomorphine hydrochloride, iodides, lobelia and belladonna. At times morphine and atrophine have to be resorted to and I know of no contra-indication to their use, especially in the severe asthmatic state when adrenalin fails to relieve the asthma.

Specific treatment consists of removing the offending substance from the patient's environment or desensitization. The elimination of the offending agent is the method of choice where possible. This means the removal of feather pillows, mattresses, cats, dogs, birds or the elimination of certain foods or whatever the offending substance may be. In pollen sensitiveness, horse dander, house dust, orris root or eggs,

wheat or milk sensitiveness, desensitization treatment is necessary. This consists of hypodermic injections of minute doses of the offending substance and increasing the dose until the patient's tolerance is raised to the point where the substance can be tolerated clinically without causing symptoms. As Thiberge so aptly states, a desensitization course is prolonged and it certainly cannot be permanently accomplished through only a dozen treatments. Non-specific treatment is to be used when the skin tests have all been negative or when specific treatment has failed to produce results. Vaccine therapy is the most important in this group of cases. Stock vaccines obtained from groups of asthma patients during the same season give better results than autogenous vaccines. In certain selected cases, x-ray therapy is of benefit. Infections of the nose and throat should be cleared up but operative procedures should be avoided whenever possible as it tends to aggravate the asthma. Nasal operations are far too commonly done in asthmatics and allergic rhinitis.

Other non-specific treatment includes Quartz lamp irradiations which are highly beneficial, tuberculin treatment as advocated by von Leuween and non-specific protein therapy.

Finally it is vital to obtain the patient's full cooperation. This can be best obtained by education, detailed explanation and the furnishing of a booklet of instructions to each patient. The allergist must possess confidence and perseverance himself to be enabled to inspire his patient with a like confidence.

The outlook for the allergic patient is remarkably hopeful if a regime such as I have tried to outline is carried out.

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DISCUSSION

Dr. E. E. Edmondson (Carbondale): I wish to compliment Dr. Taub for his excellent paper on so important a subject, and to thank him for bringing out clearly the salient points of etiology, diagnosis, treatment, and cooperation on the part of the patient. The suggestions Dr. Taub has made in reference to the necessity of instructing the patient thoroughly as to the course of treatment and insistence on faithful observance of professional directions and to habits, diet, and other care of the case are most important.

I most thoroughly agree with Dr. Taub on the rapid advances which have been made in recent years in the therapy of hay fever and hay asthma, as well as other types of allergic disorder. And I am reminded of a well-trained lawyer in my territory who suffers from the seasonal type of nasal allergy, who, when recommended to consult me, informed his solicitor that he had consulted competent authority several years ago and had been informed that nothing could be done to effect relief in his case and he was now following that advice. That may have been sound advice in legal principles which are not supposed to change, but in a science which is progressive and at certain points makes revolutionary changes in therapy and thereby great advances are effected in therapeutics to the great comfort of otherwise hopeless conditions, the principle of not seeking further relief is faulty, and much unnecessary suffering may be endured.

In a paper read before the Association for the Study of Allergy last year at Detroit, I brought out the fact that many afebrile nasal colds were of an allergic nature, and if attended to by the proper treatment early, an immunity might be established which would prevent a repetition of such symptoms and establish the patient on the positive side of the allergic balance. Being on the positive side of health balance means that the organism is able to overcome and disregard the environment so far as the tendency to manifest symptoms is involved.

That means that the body is able to resist disease tendencies, and it is equally true in allergy; those processes by which the body is enabled to overcome the allergens and show no symptoms are the processes which should be encouraged. In hay fever and hay asthma we are learning more and more of the disease aetria and are locating these in the upper respiratory tract, and by increasing the resistance of the upper portion of the respiratory system we are enabled to overcome greater doses of allergens which may assail the patient.

In the territory in which I am doing this research we have a much heavier pollution of the atmosphere by pollens than exists in New York or Chicago, but by the methods of strengthening the resistance of the nasopharyngeal area we are eliminating the necessity of administering large doses of antibodies that might produce anaphylaxis or cause a fatality as not only cited by the Doctor but as reported by many other men using the same means. In the more recent studies of allergies affecting the respiratory tract, we are having some

very excellent results by attacking the disability in its stronghold, the nasal cavity itself. This increases our percentage of restoration to normal and also eliminates anaphylaxis.

I find myself in perfect agreement with Dr. Taub in the matter of nasal surgery in allergic conditions. We should not operate in an area of lowered resistance, at least until that resistance has been increased to normal. Another point on which there is complete agreement among the informed men is that of the futility of injecting either the nasal nerve or the sphenopalatine ganglion for the relief of the symptoms of the upper respiratory tract; it allows the absorption of allergens to go on without sensory protest, and if the injections are successful in destroying the nerve structures, it renders the nasal organ a completely numbed area which is most disappointing to the patient.

Treatment of the complications of sinusitis and the infections of the naso-pharynx is materially aided by the intramuscular use of protolac (milk) and manganese butyrate cautiously administered. This latter drug often is of much value in asthmatic conditions.

It has been said often and correctly that once luetic always luetic, once a tuberculous case always so, once a malignancy always such danger; and it is equally true that once an allergic case always the tendency or possibility of recurrence, but with modern methods now at hand there is no need to remain on the negative side of the balance—no need to be a dodger of seasonal influences. The better plan appeals to many men—that of building the resistance of the patient by intelligent therapy to the point where he is enabled to overcome and disregard his environment.

Dr. J. F. Hultgen (Chicago): I have been very much interested for a number of years in allergy. I think this new baby in medicine is a very welcome addition.

A few words in regard to many of these conditions which we cannot classify or diagnose, such as would come under the head of erythema and urticaria and some forms of eczema. I have used thio-bismal intravenously with very good results. I have no idea about the mechanism thereof, but I have been struck with the frequency of the effects on pruritis in many of these cases. I do not know whether it was the sulphur factor or whether it was the bismuth. In fact, there is a notorious shortcoming in our knowledge concerning those diseases, such as purpuric affection or purpura mixed with urticaria or erythema. I would like to say that I found intravenous injection—slow injections—of thio-bisnol very beneficial in quite a few cases.

I congratulate Chicago as being the seat of the Allergic Society, and I think it is a distinct need in medicine.

Dr. Samuel J. Taub (Chicago): I wish to thank Dr. Edmondson and Dr. Hultgen for their discussions. I should just like to quote a few figures from the Allergic Clinic at Northwestern University and private cases. There were 400 asthma patients studied; 280, or 70 per cent., were found definitely allergic to some substance—food or some inhalant material with which

they were coming in contact, such as dust, cotton, wool, silk, or various substances of that kind—120 of these, or 30 per cent., were found non-allergic according to our tests. Of this group of 120, sixty of these patients showed sinus infections in the ethmoid or the antrum. All of our cases are routinely examined in the Nose and Throat Department. At the present time they are using quite a little lipiodol injections in the antral and ethmoidal cases and more have been diagnosed with this method. Of the remaining sixty patients who had no antral infections or no ethmoidal infections, we found some considerable percentage had a bronchiectasis, some had evidence of a chronic pneumonitis showing adhesions to the diaphragm, and some had delayed resolution following pneumonia. There were some cases of emphysema. There is also quite a group of cases—thirty in all—that showed combined sinus infections plus lung pathology, and these cases have probably been reinfectd by the chronic sinus pathology. As Dr. Edmondson pointed out, it is very important that these ethmoidal and sinus conditions should be treated conservatively, not by operative methods but by antral washings and probably some local packings.

Regarding Dr. Hultgen's question of the urticarias, angioneurotic edemas and the eczemas, a large percentage of urticarias are due to foods and the pathogenesis is the same in urticaria and in many eczemas as in asthma. The absorption of the protein through the digestive tract enters the circulation, and the lung in the asthmatic is the vulnerable tissue. If it is the skin, you get the eczema or the urticaria or angioneurotic edema. We found foods to be the cause of a large number of our urticarias and eczemas.

Where we do not get a definite skin test, we try the diet elimination that Rowe has brought out; by eliminating various groups and food groups, we have been able to find quite a few of the causes of these urticarias.

I have had no experience with using bismuth intravenously; but I would say that in some urticarias you do find low blood calcium, and if we use calcium, gluconate particularly, intravenously, we get some good results.

ROENTGEN DIAGNOSIS OF BRONCHIECTASIS*

ADOLPH HARTUNG, M. D.

CHICAGO

Bronchiectasis is a comparatively common disease but many instances of it are not recognized and are regarded as cases of chronic bronchitis, asthma, pulmonary tuberculosis, or other pulmonary disease. Advanced cases with profuse foul expectoration are readily diagnosed clinically and these usually present familiar and characteristic roentgen findings. Early cases, however, are frequently overlooked by both clinician and

roentgenologist because the findings are less evident and well known. It is precisely these cases which require diagnosis so they may receive the benefit of conservative treatment and thus prevent the occurrence of the late stages which offer a rather hopeless prognosis. This paper is intended primarily to call attention to some of the earlier or atypical roentgen manifestations of the disease.

Certain fundamental considerations may well serve as an introduction to the subject. The futility of purely objective interpretations of roentgen findings is probably best exemplified in examinations of the lungs where many different conditions may produce almost identical images. If the roentgenologist is to fulfill his real mission of helping the clinician solve his diagnostic problems he must have not only a thorough knowledge of disease but be able to interpret his findings in terms of disease. This applies with special force to bronchiectasis. Many of the roentgen findings in this condition are of an equivocal nature and acquire special significance only if considered in conjunction with the history, clinical and laboratory findings. Without such coordination, the roentgen diagnosis is merely a question of possibilities or suspicions—with it, it becomes a matter of probabilities or certainties.

The pathogenesis of bronchiectasis is not definitely known. Some of the more plausible theories advanced are 1. injury of the bronchial wall, 2. prolonged obstruction of a bronchus, and 3. sclerotic contraction of the parenchyma. One or more of these factors are usually associated with the antecedent or exciting causes which include in the order of their frequency the pneumonias, recurring bronchitis, the infectious diseases of childhood, aspirated foreign bodies, chronic pulmonary abscess, and chronic fibroid phthisis. The condition may also occur as a congenital lesion. Atelectasis from any cause persisting for any length of time is invariably associated with dilatation of the bronchi.

A brief consideration of some of the gross pathologic changes may serve to emphasize what the roentgen examination may be expected to disclose. Dilated bronchi with their attenuated walls are not visible on the roentgenogram any more than are normal ones. The coincident infection which invariably accompanies the process when it has reached the stage of clinical signifi-

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cance produces a fibrosis or interstitial pneumonia which accounts for the increase of linear markings commonly present. The dilatations assume various shapes and dimensions but the plain films rarely give any indications of what these may be. Their contents are responsible for the irregular increased densities seen roentgenographically and as these contents vary considerably even within short intervals in connection with expectoration, the pictures presented at different times are apt to vary even in the same individual. Associated or residual changes of the condition primarily responsible for the bronchiectasis may dominate the findings so that the presence of a bronchiectasis may be obscured or entirely masked.

The roentgen findings depend upon the location of the lesions, their extent and stage of development, and the nature of the process responsible for them. Where the changes are limited to parts of the lung below the domes of the diaphragms or behind the heart, ordinary roentgenograms may show practically no evidence of the disease. If the changes are marked, they may show through on dense negatives. Lesions behind the heart are frequently associated with cardiac displacement due to sclerosis or atelectatic changes. In a series of cases studied this was noted in over one-third of them and in about one-fifth of these it was the only demonstrable change. Where no obvious cause for displacement of the heart shadow is evident, this finding should suggest a possible bronchiectasis.

Increase of linear markings, especially into the lower lobes, is by far the most common finding, but it is also the least reliable one. It was present to some extent in almost half of the cases examined and its importance was found to vary in direct proportion to the degree of increase. Inasmuch as there is no established normal of linear markings, evaluation of this finding is largely a matter of individual judgment. Furthermore, it cannot be definitely differentiated from an interstitial fibrosis from other causes except possibly for its predilection for the lower lobes. At most, the finding from a purely roentgenologic standpoint can be regarded merely as suspicious in the majority of cases.

When this increase of linear markings is associated with irregular densities, the probability of its being due to a bronchiectasis is greatly in-

creased. These densities frequently obscure the heart outlines and also the domes of the diaphragms and may be scattered through the parenchyma of the lung. In advanced cases they produce a honeycomb appearance, which is almost pathognomonic.

When the roentgen examination discloses an atelectasis or consolidation which has been present for a considerable time, the presence of a bronchiectasis may be inferred. Densities of this kind may be uniform and sharply outlined and hardly to be differentiated from an encysted fluid accumulation. Sometimes indefinite radiolucent areas are present within the density, suggesting a bronchiectasis. In all of these conditions as well as in connection with chronic lung abscess, the use of iodized oil injections is necessary to demonstrate the dilated bronchi. Cases of chronic fibroid phthisis associated with bronchiectasis as a rule also show no distinctive findings to indicate an associated bronchiectasis but several cases seen presented a peculiar fibrotic network which was very suggestive and subsequently confirmed with the aid of iodized oil.

A localized bronchiectasis of either the atelectatic or other variety should suggest a foreign body origin and a special study ought to be made of it with that in view, including a bronchoscopic examination. This was beautifully illustrated by a case demonstrated by Dr. Manges in a recent lecture where the bronchoscopic examination revealed a blade of grass. Some of these cases in infants where no definite history is obtainable are supposed to be cases of pneumonia and the bronchiectasis is a secondary change.

The use of iodized oil injections has rendered the diagnosis of bronchiectasis certain as to its presence and accurate as to location, extent and nature. It has been especially valuable where clinical signs pointed to the disease but the roentgen examination was doubtful or negative. However, even in cases where the roentgen findings were positive, it has shown that the extent or location of the disease was not always limited to the area of demonstrated changes but frequently was far more extensive than the findings seemed to indicate. As has been mentioned, it makes it possible to detect the condition in atelectatic or consolidated lung tissue and in association with chronic lung abscess or fibroid

phthisis. With it the nature and size of the dilatations may be shown.

In our experience in connection with iodized oil injections, pure saccular dilatations have been found to be extremely rare. Most of the cases present cylindrical expansions of the lumen of the bronchi of variable degree and many of these also have ampullar dilatations or cul-de-sacs associated with them. A common finding is an abrupt stoppage of the oil before it reaches the smaller bronchioles, probably due to secretions distal to it. This is in marked contrast to normal cases where the oil penetrates to the terminal structures. Dilatations in consolidated or atelectatic lung tissue usually assume irregular or atypical shapes. In chronic fibroid phthisis a peculiar nodular type has been demonstrated which has not been found in other cases and which therefore may suggest the origin of the process.

The chief conditions from which bronchiectasis must be differentiated are chronic bronchitis and pulmonary tuberculosis. In the case of the former, iodized oil injections show no dilatations of the bronchi. Only in exceptional cases is it necessary to resort to bronchography in connection with pulmonary tuberculosis, for clinical and laboratory findings usually are distinctive and the roentgen examination as a rule presents an entirely different picture. Rarely a large bronchiectatic cavity closely resembles a pulmonary abscess. In these cases, iodized oil injections are of value for, whereas the oil readily enters the former, it seldom does the latter. Cases of bronchial fistula with empyema also can be easily differentiated by bronchography. Often iodized oil injections are used in connection with known pathological processes to determine whether a complicating bronchiectasis is present which might account for some of the symptoms present.

Statistics based on an intensive study of 92 cases of bronchiectasis previously published, have shown that the findings on plain roentgenograms as far as could be determined, gave a correct diagnosis both as to the presence and location of the lesion in only 20 cases. In 17, the findings were suspicious. In 16 bilateral cases it was possible to make a positive diagnosis on one side while on the other, the findings were so slight or atypical, that no diagnosis, or merely one of "suspicious for bronchiectasis" could be

made. In 39 cases it was impossible to make a diagnosis. The reasons for the inability to make a correct diagnosis both as to the presence and location of the lesion were as follows: No abnormal findings, 11 cases; no abnormal findings on one side, 12 cases; lesions obscured by heart, 17 cases; lesions obscured by diaphragm, 5 cases; lesions obscured by fibrosis, 21 cases; lesions obscured by fluid in pleural cavity, 1 case.

Cases presenting findings similar to some of those which passed unrecognized at the time of making this study are less apt to be overlooked in the light of the knowledge acquired. The results of this study and subsequent experience seem to justify the following conclusions:

1. In about 60 per cent. of all cases a diagnosis of bronchiectasis can be made from a study of the plain films.

2. In the majority of the remaining cases, such an examination will reveal findings of a nature to indicate the probable presence of bronchiectasis or the desirability for further investigation by bronchography.

3. Diagnostic bronchography with iodized oil is absolutely essential for obtaining accurate information relative to the nature, location and extent of bronchiectatic dilatations.

DISCUSSION

Dr. Gerald M. Cline, Bloomington: Dr. Hartung's paper again emphasizes the value of x-ray in pediatrics for most of his cases of bronchiectasis were in children. His use of iodized oil as a diagnostic aid was particularly valuable and interesting.

Dr. George M. Landau, Chicago: It is unfortunate indeed that the facilities do not permit the showing of Dr. Hartung's slides along with his splendid paper.

Dr. Harold Swanberg, Quincy: I wish Dr. Hartung would state briefly the technique he is now using for the administration of iodized oil.

Dr. Adolph Hartung, Chicago: We use the intratracheal method in the administration of the iodized oil, and it is extremely simple. It can be done even with children without any preliminary preparation, and can be made an office procedure. Preliminary cleansing is followed by inserting the needle in the inter cricothyroid space, after filling the syringe with warm oil and then injecting it. It takes only a very few minutes, but the individual should be cautioned to refrain from coughing as much as possible. Coughing tends to spread the oil in a manner to obscure the pathology.

I am sorry I could not show the slides because they would have brought out the various conditions I mentioned. Practically all of our cases occurring in older individuals show the cylindrical type of dilatation up in the region of the hilum and behind the heart. The greatest help we have gotten is in children. Where we

find cases in which there has been a chronic productive cough for years, the bronchi show very definite dilations. One thing I should like to stress in regard to localized bronchial dilations in children is that some of them are due to aspirated foreign bodies which subsequently leave bronchiectatic changes.

THE TREATMENT OF GASTROENTERIC INTOXICATION IN INFANTS*

JOHN ZAHORSKY, M. D.

ST. LOUIS, MO.

In practice, ordinarily, the diarrheas of infancy, which occur mostly in the summer months, are divided into two groups; namely, 1. fermentative diarrhea and 2. infectious diarrhea. The first is also called dyspeptic diarrhea, milk poisoning, and in its severe form, cholera infantum. The latter group is called inflammatory diarrhea, enterocolitis, ileocolitis, dysentery, etc. The practitioner is unable at the onset to differentiate between the groups. Both may begin with similar symptoms. In both there is a diminished digestive capacity and an increased fermentation in the small intestine. We speak of the former as a functional disturbance, and the latter as an infection of the mucosa. In the first form there is an excessive bacterial activity in the intestinal contents due to some functional disturbance; in the latter, a penetration of the intestinal mucosa has been accomplished by certain pathogenic bacteria and a consequent inflammatory reaction has taken place. We recognize the difference, clinically by the presence of inflammatory products in the stool; namely pus. The mucopurulent discharge from the bowel may be visible to the naked eye, but often we must depend on a microscopical examination. A drop of liquid stool which under the microscope shows hundreds of cells in each field is clear evidence of the infectious or inflammatory nature of the process.

The differentiation of the kind of diarrhea is important, but the practitioner is especially interested in another division; namely, 1. a simple diarrhea without toxic symptoms, and 2. a diarrhea with toxic symptoms. The former presents no difficulty in treatment. A laxative, several hours starvation, a plentiful supply of water, and the administration of bismuth, with or without opium, results in a rapid convalescence. Most

of these cases are probably functional disturbances, but many depend on milk infections of isolated portions of the intestine.

A difficult problem is presented when the diarrhea is accompanied by toxic symptoms. Then the prognosis becomes questionable and the treatment extremely important. We distinguish between several forms of these general symptoms.

A. Hyperprexia. This depends on several factors, such as absorption of toxic products, water loss and a high terrestrial temperature. It is best combated by hydrotherapy.

B. Convulsions. This also varies as to the cause. It may depend on the height of the fever, the condition of the nervous system (as in calcium deficiency) or a pure, bacterial toxicosis, as in dysentery. We use chloroform or ether to subdue the convulsive tendency if the ordinary warm bath fails. Occasionally, I resort to a hypodermatic injection of morphine. The injection of magnesium hydrate has proven dangerous in my hands in these cases. Chloral hydrate or barbital may be prescribed in persistent cases. If a calcium deficiency is present, calcium chloride may be very effective.

C. Gastroenteric intoxication. The principal danger in all severe diarrheas is the peculiar syndrome, called gastroenteric intoxication; or in Finkelstein's terminology, alimentary intoxication. Briefly the symptoms are drowsiness, stupor, and indifference to the surroundings, ashen color of the skin, sunken eyes, deep breathing, slowing of the pulse, anuria, and finally the appearance of an inelastic skin and subcutaneous tissue. The temperature is only slightly elevated as a rule. These symptoms are superimposed on a moderate or severe diarrhea. What is the nature of this intoxication?

Before the publication of Finkelstein's critical studies, it was generally assumed that the intoxication was caused by bacterial products of decomposition in the intestine, but this author pointed out that no toxic substance could be found. Finkelstein believed at first that febrile disturbance and intoxication depended on the same cause; a disturbance in the intermediary metabolism brought on by the excessive absorption of sugar and whey. Later it was found that salts may cause a fever, also the excessive ingestion of protein may produce a marked elevation in temperature, but the febrile movements produced by these substances are not the same as

*Read before the Madison County Medical Society, May, 1931.

the intoxication. At least, that is the conclusion of the independent observers. The next attempt to determine the cause of intoxication was a study of the acid base equilibrium by various American workers; and for several years the clinician assumed that gastroenteric intoxication was synonymous with acidosis. The mistake is easily made, since so many cases of intoxication show a marked hypernea. It is now believed that either an acidosis or alkalosis may be present in intoxication; although the loss of alkali, the loss of water and elevation of temperature can be induced by certain toxins without any appreciable change in the acid base ratio.

Of great practical importance was the recognition that the rapid loss in weight and the inelastic skin depended on a loss in water. Thus arose the term dehydration. The intoxication was assumed to be one of dehydration. This theory was championed especially by some American writers. The term anhydremia was proposed as a substitute for intoxication. I myself became very hopeful that the actual cause has been discovered; but in 1926 we had a severe epidemic of summer diarrhea, the infectious type mostly. I adopted the anhydremia theory in practice. The babies were given plenty of water, by the stomach, under the skin (we use Ringer's solution) and even intraperitoneally. There was a temporary improvement, but out of 20 cases only five recovered. I observed, then, that the babies under this treatment passed plenty of water by the urinary tract, but the tissues remained inelastic. The conclusion was obvious, the tissue could not hold water because the cells were sick. We have discontinued the practice of over dosing the baby with water, you can do much harm this way.

The theory of dehydration is much over-emphasized in the treatment of acute disease. A plentiful supply of fluids in the hot weather is necessary, but every effort should be made to give it by the mouth and not in the tissues nor abdominal cavity. Only when it is impossible to administer water by the mouth, as in pyloric stenosis or protracted vomiting, is it necessary to give it in the tissues. Pure water by the stomach is better than any salt solution yet devised given hypodermatically.

For several years in Germany and Holland other important researches have been undertaken

which are gradually modifying the clinician's view of the subject. Plantenga, a Dutch pediatrician, was among the first to prove that a powerful toxin is present in a bouillon culture of the colon bacillus. He experimented with calves, and he succeeded in producing the symptoms of alimentary intoxication by injection of this culture. In some later studies (Yahr. f. Kinderkr. Nov., 1930) he demonstrated that neither the filtrate nor the washed colon bacillus could produce the symptoms, but it takes the combination. The fluid of the culture acts in the same sense as an aggressin; that is, paralyzes the leucocytes so that the endotoxin of the colon bacillus becomes effective.

Bessau and others demonstrated that the colon bacillus is present in enormous numbers in the upper ileum in these cases, a portion of the intestine which is comparatively sterile in healthy infants. Meanwhile studies have been made on the toxicity of the aminoacids and their absorption from the diseased alimentary canal (Rosenbloom, Monalseter Kinderl., June, 1930), without any positive results except that histamin has been shown to be very toxic. The study of the intermediary metabolism in experimentally produced intoxication in animals has revealed nothing definite. (Berger and Rosenbloom, Monalseter. f. Kinderl., July, 1930.)

A very interesting clinical study was made by Scheer and Abraham (Jahr. f. Kinderl., December, 1930). Scheer had previously discovered that in the severe forms of intestinal indigestion colon bacilli are found in the duodenum and further observed that these colon bacilli had pathogenic qualities. There are, therefore, harmless and pathogenic colon bacilli. Scheer obtained these virulent colon bacilli from an infant suffering from intoxication. From these was prepared a sensitized colivaccine. He used this vaccine for 14 cases of gastroenteric intoxication and all recovered promptly without any marked change in diet except a plentiful water supply and a reduced quantity of the regular food. Every second day he injected the vaccine subcutaneously beginning with 20 million and increasing to 80 million. Two injections usually sufficed. I know of no other clinical results that approached this success.

The theory that an acute otitis and a mastoid infection is a common cause of severe diarrhea

and intoxication has been offered, but Allan Brown of Toronto (South. Med. Jr., Feb., 1930) has pretty thoroughly upset this theory. While otitis media and even mastoid infections are a common complication in diarrheal diseases in hospitals, it is by far less common in the home. I have watched many of these cases and examined the ears carefully and in a small percentage an inflammatory condition of the membrane tympani was present, but this seemed to be a later manifestation, and generally subsided spontaneously without paracentesis of the drum membrane. The theory of parenteral infection as a cause of serious diarrhea is much overrated in my estimation.

We must come back to the old theory—gastroenteric disturbance. It is not merely a metabolic disturbance, it is an actual poisoning of the body by putrefactive products formed in the upper part of the small intestine where absorption is most active. The symptoms arise especially in inflammatory enteritis when there is an actual infection of the mucosa by some form of the dysentery bacillus or a virulent colon bacillus. Occasionally in the young baby it may arise in a dyspeptic diarrhea, or even in an allergic enteritis. Hot weather favors this intoxication by diminishing the intestinal secretions and by the excessive water loss from the skin; but hot weather alone is not sufficient.

Keep the baby cool and give plenty of water during the hot weather. Do not give milk which may be contaminated by pathogenic germs. All milk and cream for the baby should be boiled during the summer. When a diarrheal condition ensues, stop the milk and give only barley water or rice water sweetened with sugar or syrup. If the symptoms of gastroenteric intoxication are present the following is suggested: Keep the baby cool and give the baby frequent tepid baths. Quiet the stomach with some medicinal antemetic such as phenol, lime water, magma magnesia, peppermint water, soda, etc. Then give plenty of sweetened rice water or barley water. Very definite directions as to quantity must be given: about one quart daily. This is 4 ounces every three hours, or 3 ounces every 2 hours. Instead of barley water you may give Ringer's solution diluted with water one-half, and add 5 or 6 per cent. sugar or syrup as suggested by Vollmer. Do not attempt to check the diarrhea with drugs. The rectum can be

washed out 2 or 3 times a day with normal salt solution. The baby must be kept on this for two or three days until all toxic symptoms have disappeared. If the symptoms of starvation appear, a blood transfusion must be resorted to, or some human serum can be given subcutaneously, or intramuscularly. This may have to be repeated, but do not expect too much from a blood transfusion. Subcutaneous injections of salt solution or Ringer's solution or Hartman's solution should be used only when the clinical signs of dehydration persist. Intraperitoneal injections should be used only in extreme cases, when all the tissues are dry and the fluid is not retained by the stomach. The return to protein food must be made very slowly, a little buttermilk or casein can be added to the cereal decoctions. A small quantity of human milk, when obtainable, may be used in the same way.

It must be remembered that human milk is easily fermentable and may rapidly balloon up the intestine. On the second day of the treatment a vitamin substance must be added. We give some orange juice, gradually increased. A clear vegetable soup to furnish vitamin B is given on the third day. The cereal decoction should be thickened and a small quantity of milk protein added. Scraped apple and banana are excellent additions.

The prognosis depends in most cases on the extent of intestinal disease. The higher in the intestine that the inflammatory process exists the graver the prognosis. Even when severe toxic symptoms have abated, the question of nutrition is paramount. Do not starve the patient too long. The principal therapeutic effort should be to nourish the patient, give the cereal decoctions with the addition of vitamin substance; also egg puddings, and gelatin preparations must be tried. Older children are encouraged to chew on bread, crackers or bananas. The blood volume shrinks so much that intestine has not enough blood supply to begin digestion. A small blood transfusion often starts the nutrition.

I can not refrain from expressing the hope that a specific antitoxic serum for this disease may soon be discovered. Perhaps a sensitized vaccine may answer our purpose. The recent report of Scheer is very encouraging. Attention is hereby called to the apple diet which is receiving so much attention in Europe. Scraped

apple is to be preferred. Some enthusiastic supporters are found among the pediatricians of Europe. Of course, the usual drug treatment has to be used in many cases. In persistent diarrheas the tannic acid compounds as acetyl-tannic acid are very helpful.

536 N. Taylor.

POSTOPERATIVE MANAGEMENT OF ABDOMINAL OPERATIONS*

C. DAVID BROWN, M. D.

CHICAGO

In presenting a paper attempting to discuss the entire scope of this subject, it is necessary to eliminate lengthy, detailed description of individual procedures. Consequently, in this paper I shall outline our usual method of handling a large surgical service with a discussion of some of the individual problems that arise during complications.

In the past there has been little or no importance attached to postoperative care, and it is only in the last two or three years that any writing of consequence has been done on this subject. Now it is extremely gratifying to see the wealth of literature that is being produced on this important phase of surgery.

When this attitude of indifference is entertained by the surgeon, the postoperative care is almost entirely relegated to the internes and nurses. The consequence is that the patients suffer from the inexperience of these attendants. A little time and care spent on postoperative treatment is unquestionably a good investment and will soon show a decrease in morbidity as well as mortality. It may seem surprising, but the man of only average operative ability, who gives his patients thoughtful after-care, will have results as good, or better than the brilliant surgeon who is too busy to look after his patients properly.

In bringing before you an outline of our procedures, I will first call to your attention the widely discussed subject of the choice of, and use of sedatives. Morphine sulphate, hypodermically administered, is used by most men, but there is a wide variation in dosage and fre-

quency of administration. It is our belief that morphine should be used in quantities sufficient to keep the patient from acute pain and to prevent restlessness. Morphine sulphate gr. 1/6 every six hours for the first day, or even gr. 1/4 every six or eight hours regularly for 24 hours has proved much more satisfactory than the usual 1/4 gr. *Prn.* to be given as the nurse's judgment dictates, or which is more frequently the case, at her convenience. When morphine has been given regularly the first 24 hours after operation, it is unusual to require any narcotic during the second day, but a patient is always entitled to the consideration of morphine the second evening and even on the third evening, occasionally. There will be men to criticize so much morphine as being unnecessary and habit forming. However, it has been shown by experience, and by recent extensive writings in the *Journal A. M. A.* by Fishbein, Hollaway, Culter and others that drug addiction arising from morphine after the ordinary abdominal operation, is rare. As for the necessity, it is our belief that the patient is much better off from the quiet stupor of morphine than the restless, exquisitely painful, nightmare that follows an operation without sufficient narcotic. A set routine for morphine cannot be given to apply to all kinds of operations and all sizes of patients, and so the surgeon's judgment is called upon to individualize each case. It is our plea that morphine be used in sufficient quantities during the first 24 or 48 hours to produce a definite narcotic effect, whether this amount be small or large, depending on the patient's tolerance to this drug. For restlessness, discomfort or pain after 48 hours, the surgeon may resort to codeine by mouth, phenobarbital, allonal, amytal, acetosalicylic acid, amidopyrene or any of the other myriad of sedatives that the individual case, or his fancy may dictate.

The second measure to bring to your attention is the need of adequate amounts of fluids. I feel free to say that all of you use proctoclysis on selected cases. In our service, continuous proctoclysis of normal saline is used routinely, except in operations on the colon and in certain cases of ruptured, gangrenous appendicitis. The appendectomy for the frequently found acute appendicitis is considered not to be a contraindication to the use of proctoclysis. Hypodermoclysis is used immediately after operations

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From the service of Dr. Geo. H. Schroeder, Lutheran Deaconess Hospital

on all cases in which proctoclysis cannot safely be used, and in addition to proctoclysis in gastric resections, gastric or small bowel anastomoses, and in all cases of extensive operations where shock is present or is imminent. In our experience normal saline is the fluid of choice in hypodermoclysis as well as proctoclysis. Glucose in varying amounts is used for intravenous administration. Intravenous use of glucose is desirable and highly beneficial in cases of shock, in cases of low resistance, and in gastric work where carbohydrates cannot be given orally for some time. The usual amount of glucose given to the average adult patient is 50 grams in 20-25 per cent. solution. The concentrated solution given slowly, has been found to put less strain on the heart than does a larger volume of a more dilute solution. There has been a number of articles recently advocating the use of the continuous drip method for intravenous glucose. J. Shelton Horsley in a paper before the Indian State Society in 1929, recommends and condones this method, and a recent paper by Hyman and Hirshfeld in the *Journal A. M. A.* speaks highly of this procedure also. In the first place, the vast amount of equipment necessary for 30 or 40 patients is prohibitive, and it is our opinion that leaving these canulae in place for several hours or even days without attention is fraught with definite danger. Because of these reasons, our cases are given glucose by the gravity method through a closed system. With the exception of whole or citrated blood, glucose solution is the only fluid used for intravenous administration.

The third measure that is used almost universally is the enema. There are many kinds of enemas, but they all have common purposes, namely to relieve the patient of gas, to prevent a paralytic ileus, to produce evacuation, and occasionally to provide nourishment. It is usually unnecessary to use enemas before 48 hours, but it is perfectly safe to use normal saline or tap water as early as 36 or even 24 hours. The reason for the use of tap water or normal saline in the early enemas is that these solutions go only as high as the quantity of fluid and the pressure will permit. On the contrary, soap suds or medicated enemas, even in small quantities, travel beyond the ileo-cecal valve into the small intestine. The 1-2-3 or 2-4-6, glycerine, magnesium sulphate and water enema is probably the most efficacious in relieving distention and

can be given safely after 48 hours, with the exceptions already mentioned as contra-indication for proctoclysis. Soap suds or petrolagar enemas are used throughout the convalescence to effect evacuation in preference to cathartics. The 5 per cent. glucose with 2-3 per cent. sodium bicarbonate enema may be used when nutriment is desired, but is of questionable value. The old famous milk and molasses enema still has an occasional use in early peritonitis or paralytic ileus. For the patient who is in distress from too vigorous administration of rectal fluids, or from too frequent use of enemas, 4-6 ounces of warm olive oil as a retention enema is a great boon.

We have outlined our procedures in using the so-called routine measures, and so come to the less common means that are suggested for various complications. The gastric lavage is an extremely valuable measure that has definite use in cases of dilatation of the stomach and intestinal obstruction. In cases of persistent nausea and vomiting after any operation, the patient is markedly relieved by a gastric lavage with a 5-10 per cent. sodium bicarbonate solution. Particularly after gallbladder work, much distress from vomiting can be obviated by the use of the stomach tube. In the rather uncommon misfortune, namely, acute dilatation of the stomach, it is absolutely necessary that the patient have frequent lavages. In these cases it is our practice to use this procedure every hour until regurgitation ceases and the gastrum recovers its tone, even, if it is necessary, for a period of a day or two. The Ewald tube is used in nearly all cases for lavage, but after gastric resections, gastroenterostomies and other gastric work, any possibility of perforation of the suture line may be removed by the use of the Rehfuess tube. It is our opinion that the stomach tube is not used often enough rather than too frequently. Performing a gastric lavage is a repulsive procedure both to the operator and to the patient, but the subsequent relief is more than sufficient to recompense for that. Undoubtedly, it is preferable to do many unnecessary gastric evacuations than to lose a single patient by neglecting this relatively benign measure.

Blood transfusion has been mentioned earlier in this paper, but it is of sufficient importance to warrant further discussion. In certain cases of shock and hemorrhage, particularly in cases

of ruptured ectopic pregnancy, gun-shot wounds of the abdomen, and ruptured viscera, blood transfusions may be considered as a life saving measure. Like gastric lavages, blood transfusions are done to infrequently. Blood transfusion necessitates a donor, requires careful typing, and preferably, requires a mayor surgical set up. Because of the expense to the patient and of the difficulties to obtain donors, transfusions are occasionally omitted even when we know it would be to the patient's decided advantage to have 400 or 500 cc. of blood. The citrate method is usually used on our service because of ease of administration and probable less danger. However, there are some who believe that the whole blood transfusion is better when properly done. Any procedure that is to be used frequently on a large number of cases must have simplicity and safety as its prime essentials, consequently our choice of the citrate method. Blood transfusions do the most good if given early on definite indications, but are useless or even disastrous if given when the patient is moribund.

In a series of abdominal operations, any surgeon may expect to encounter a certain number of suppurative cases in his work. In these so-called pus cases either of the peritoneum, or of the abdominal wall, or both, drainage is essential after the operation. Elevation of the head of the bed is imperative, particularly in cases of generalized peritonitis. In addition to the position of the patient, hot dressings or other forms of heat are a valuable adjunct in their treatment. Hot boric or hot sterile water dressings should be used to promote drainage and localization in cases of suppuration. However, hot dressings carry the danger of maceration to the wound if applied over an extended period. It is our opinion that hot fomentations should not be applied for more than 24 hours without interruption, and in our experience the maximum benefit is obtained by applying wet and dry dressings on alternate 12 hour periods. The heat can still be applied with dry dressings by use of the hot water bottle or the electric pad over the dressings. In suppurative cases all dressings by the interne are handled by the man on minor surgery so that the interne assisting at the operations is not a possible source of infection to the clean patients. In certain pus cases, it has been found that the judicious use of infra red units or of the mercury quartz lamp have a definite effect in short-

ening the period of convalescence. Any method that may be safely used to decrease the period of hospitalization in these cases, certainly should be employed. Hot applications to the abdomen either moist or dry, are a decided help in combating the occasional case of paralytic ileus also. In addition to stupes and enemas to combat any tendency to intestinal stasis, it is necessary, occasionally to try pituitrin hypodermically. Pituitrin can be given safely in practically every case in which the continuity of the bowel has not been disturbed, but its use is absolutely forbidden in cases in which postoperative intestinal obstruction or peritonitis is even suspected. The results from pituitrin are extremely variable, but are so strikingly beneficial occasionally that this drug should be given a trial when indicated.

A troublesome complication that is encountered occasionally is the inability of the patient to void. Caffeine citrate administered orally in 3-5 grain doses every 4 to 6 hours has given good results in a few cases, but cannot be depended upon for constant help. If, after a fair trial of the common physical stimuli, the patient is still unable to micturate, the use of the catheter, even for an extended period, is imperative.

Time will not permit the discussion of medications, diet and drains, but no paper could be considered complete that did not discuss the pulmonary complications. It is this group of misfortunes that is responsible for more surgical deaths than any other cause. Pneumonia, massive collapse, and embolism are a formidable trio, and recovery from these depends to a large extent on the patient's resistance along with appropriate medication. One point in treatment, that is extremely essential, is that embolism requires absolute quite even with morphine, while frequent change of position is necessary in cases of massive collapse and as a prophylactic against pneumonia. There has been much work done in the last few years on the use of carbon dioxide as a prophylactic measure after an anesthetic. Hendersen, Haggard and Coburn have covered this in detail, both experimentally and clinically in the *Journal A. M. A.* in March, 1920. This is unquestionably the best method that we have available at present for the prophylactic treatment of pulmonary complications, but again a method of this kind is made prohibitive as a routine because of the difficulty of administration. If careful prophylactic measures of fre-

quent change of position, propping up in bed, pneumonia jackets and appropriate medications are used, the dangers of pulmonary complications will be reduced to a minimum.

Now the patient has been operated upon successfully and his comfort and safety have been guarded during the convalescence by appropriate sedatives, fluids, enemas or other special procedures. We have arrived at the time of the patient's discharge from the hospital. The duration of the stay in the hospital is another subject on which there is a wide variation of opinions. However, I will state that none of our abdominal cases are discharged from the hospital before the 10th postoperative day and in uncomplicated cases of pelvic work, gallbladder work, or other extensive procedures, the minimum is 12 days.

In closing I wish to say a word in regard to the instructions given to the patient as to the care of himself after being discharged from the hospital. This is a step that is too frequently neglected with occasional unfortunate results. A word of caution to the patient about going up and down stairs, about lifting, about straining at stool, and about diet will help to avoid any likelihood of trouble and will enhance the operator's reputation as a careful surgeon.

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DISCUSSION

Dr. A. P. Standard, Macomb: I am sure that this paper has opened a subject to which very little attention is paid. Dr. Brown said that there had been very little written upon this particular subject. I think that is true. However, I think the men who have been fortunate enough to be associated with the smaller institutions without a large interne service and who have been compelled to look over the cases and watch the after care, have had more of this work. Personally, I do not think there is any part of the surgical procedure that is more important than the after care. In this connection I think it is impossible to separate the preliminary preparation of the patient for surgical care; in other words, I am of the opinion that a great many of the complications with which we have to contend

after surgical operation could be prevented by a proper preliminary preparation of the patient.

You have heard this afternoon a great deal of discussion about the pulmonary complications following surgical procedure. You have also noted that the statement was made that where the patient was properly prepared there was a decided drop in the percentage of cases that suffered from pneumonia following surgical operation. It seems to me that if we would take a little more time before operation; in other words, if we do not send the patient directly from the office after the diagnosis was made in the afternoon and hurriedly operated upon the next morning, that we would have fewer of these complications to take care of. I believe any patient unless it is an emergency should spend two or three days in the hospital under the supervision of the surgeon before he undertakes any surgical procedure. More and more I am insisting that my patients spend forty-eight hours in the hospital before surgical operations.

As to the use of sedative, we should all use a certain amount of sedatives in our work. I believe in the last few years, and perhaps more so in the very near future, we will use less of the so-called narcotics. This change is going to be brought about by a radical change in the method employed for anesthesia. After a local anesthetic the patient who has had a hypnotic of mild type preceding operation will require less morphin in the first few hours. In the past few years I have used small doses of the barbituric acid group; this reduces the amount of morphin required.

As far as gastric lavage is concerned, I of course agree that there are cases following operation upon the upper abdomen where such procedure is indicated. However, I think these cases are in the minority. The comfort of the patient is the thing we should all consider and do everything in our power to see that the patient is comfortable following any surgical operation.

I think the promiscuous use of adhesive plaster on the abdomen causes any patient to be more or less uncomfortable and can be eliminated.

As to the type of suture materials, tension sutures have a lot to do with the comfort of the patient. I never use silkworm-gut tension sutures because it is hard and uncomfortable. A simple suture of waxed silk applied double the ends being tied over 2 rolls of gauze are much more comfortable and prevents the transverse scars which are always present when tension sutures are tied across the line of incision.

As far as enemas are concerned, I heartily agree with Dr. Brown that enemas should be used in preference to strong cathartics. I have tried all the combinations in enemas and now limit myself to the use of the 1-1 enema, consisting of a pint of water and an ounce of glycerin. I am heartily against irritation at either end of the intestinal tract.

I am sure we all appreciate Dr. Brown's calling our attention to these points which are most important in the handling of any surgical case.

Dr. C. David Brown, Chicago (closing): I am extremely grateful for the consideration the men have

shown in the discussion of my paper. It is one subject about which we can all talk and in which we are interested. If we were to have a round table discussion we would get many different opinions with no definite conclusions as to the most valuable measures. For these reasons I have simply tried to indicate the different procedures used in our work. Dr. Standard brought out the point that the preoperative care is of great importance in the postoperative care. This fact is steadily gaining in its acceptance with the resultant benefit to the patients.

UNITED STATES PUBLIC HEALTH SERVICE PELLAGRA PREVENTIVE VALUE OF CERTAIN CANNED VEGETABLES

The United States Public Health Service has recently completed a study of the pellagra preventive potency of canned spinach, canned turnip greens, mature onions and canned green beans. These studies are of value, as they indicate the efficacy of these vegetables in the prevention of pellagra.

Canned spinach supplies the pellagra-preventive vitamin, but cannot be regarded as especially rich in it. It is, however, considered an important contributory source of this factor. Canned turnip greens supply the pellagra preventive vitamin and, at least in liberal quantity, adequately supplement an otherwise pellagra-producing diet. This substance meets many of the requirements of a practical and effective dietary supplement in the pellagrous sections. The mature onion is a very poor source of the pellagra-preventive vitamin. Canned green beans are, relatively, a poor source of the pellagra-preventive vitamin.

MICROSCOPIC METHOD OF TYPING PNEUMOCOCCI BY USE OF STANDARD ORGANISMS

Royall M. Calder, Durham, N. C. (*Journal A. M. A.*, Sept. 5, 1931), describes a microscopic method of typing pneumococci by the use of stained organisms, in which the organisms are prepared in suspension as for an ordinary macroscopic typing, and a drop is taken up by a capillary pipet and transferred to each of the four cover slips. Another capillary pipet is held for a moment in a bunsen flame to seal its end and bend it into the form of a small hook. This hook is dipped into the gentian violet solution, and the adhering dye is allowed to dry completely. The stain is worked into the drop of bacterial suspension on the cover slips and, as the film of dye on the hook is very thin, the amount mixed with the drop of suspension can be controlled accurately. The amount of dye to be worked into the drop to secure the best staining can be gaged easily after a little experience. If the dye as it comes off the hook spreads unevenly through the drop, a second capillary hook, without stain, can be used to secure an even mixture. The organisms take up the dye selectively and appear as deeply stained bacteria in an unstained or faintly bluish medium. After the drop has been stained, equal volumes of the diluted serums are added by capillary tube and thoroughly mixed with

the suspension by means of capillary hooks, care being taken, of course, to use separate stirring rods for each of the various preparations so as not to mix the serums. In the ordinary typing, four hanging drop preparations are set up, one for each of the three fixed types and one without serum for control. The cover slips are inverted over hollow-ground slides, sealed and placed in the shaking machine, where five minutes of shaking usually brings about sufficient agglutination to be read with the 4 mm. objective.

UTERINE HEMORRHAGE IN PELVIC INFLAMMATORY DISEASE

According to C. F. Fluhmann, San Francisco (*Journal A. M. A.*, Sept. 5, 1931), abnormal uterine bleeding is found in from 35 to 50 per cent of all patients with acute or chronic salpingitis. This bleeding may manifest itself clinically in five ways: (1) profuse periods, twenty-eight day cycle; (2) too frequent menses; (3) atypical irregular bleeding; (4) continuous bleeding, the onset coinciding with a normal menstrual period, and (5) a period of bleeding, the onset occurring between the eighth and eighteenth days of the cycle. The most important factors concerned in the production of the bleeding are interference with uterine contractions from adhesions and malpositions; pelvic hyperemia; endometritis; ovarian deficiency induced by chronic periophoritis and hyperemia, and corpus luteum abscess formation.

Society Proceedings

COOK COUNTY

CHICAGO SOCIETY OF INDUSTRIAL MEDICINE AND SURGERY

Meeting, November 4, 1931

1. "Skeletal Traction in Fractures of Long Bones."
 2. "The Present Status of Industrial Medicine and Traumatic Surgery".....Frederic A. Besley
- Discussion: 1. William R. Cubbins.
2. Harry Mock.

CHICAGO ROENTGEN SOCIETY

Meeting, November 11, 1931

- "Verified Examples of Diseases of Bone and Benign and Malignant Tumors of Bone in Which It Has Been Ten Years or More Since the First Treatment" (Lantern Slide Demonstration).....
.....Dr. Joseph Colt Bloodgood, Johns Hopkins University, Baltimore, Md.

CHICAGO MEDICAL SOCIETY

*Joint Meeting with the Chicago Heart Association
Wednesday, November 18, 1931*

- "Silent Endocarditis".....Don Sutton
"Age as a Factor in Cardiac Diagnosis".....
.....Robert B. Preble
"Rheumatic Heart Disease in Children".....
.....Harrold Bachmann
"A Study of the Clinical and Electrocardiographic Effects of a Glucoside of Squill"....Chauncy Maher

CHICAGO UROLOGICAL SOCIETY

Meeting, Wednesday, November 25, 1931

"Fibrolipomatosis of the Kidney." Report of a Case
.....Herman L. Kretschmer
and L. E. Pierson, Sioux City, Ia. (By invitation)

"Skin Metastases in Carcinoma of the Bladder"...
Harry C. Rolnick and C. P. O'Neill (By invitation)

"A Spontaneously Expanding Bougie for Ureteral
Dilatation.....Ben Earl Fillis

A table will be reserved in the Dining Room of the
Medical and Dental Arts Club, at 6:30 P. M., for mem-
bers and guests desiring to have dinner before the
meeting.

The Clinical Meeting will be held at the University
of Illinois Research Hospital, 1817 W. Polk Street,
Wednesday morning at 9 o'clock.

Alfred E. Jones, Pres. L. L. Veseen, Secy.

OGLE COUNTY

The Medical Society of Ogle County met at the
Lincoln Hospital at Rochelle on the evening of No-
vember 12, 1931.

Election of officers resulted as follows: President,
C. H. Schaller, Rochelle; vice-president, R. O. Brown,
Mt. Morris; secretary-treasurer, A. R. Bogue, Ro-
chelle; censor for three years, Joe Kennedy Deterick,
Rochelle; delegate, W. E. Kittler, Rochelle; alternate
delegate, A. R. Bogue, Rochelle.

Miss Swenson, Ogle County nurse, presented ma-
ternity pre-natal nursing program. Program was en-
dorsed by the Society.

Dr. H. J. Stengel, Mt. Morris, was elected to mem-
bership.

Moved by Dr. Kittler a committee be appointed to
offer resolutions on the death of Dr. Thomson.

Members stood in silent prayer for one minute.

Moved by Dr. Kittler a committee be appointed to
report and visit the sick members. Seconded and
passed by the society.

Dr. Beveridge appointed Drs. Kittler, Brown and
Warmolts.

A motion passed for the secretary to extend a letter
of sympathy to Dr. R. R. Ferguson, of Chicago, on
his recent illness.

Following the business meeting Dr. Roswell Pettit,
of Ottawa, gave a very able dissertation on the pre-
sent treatment of carcinoma.

Particularly instructive was the progress in results
accomplished in the past decade.

Drs. Weld and Murphy concurred with Dr. Pettit in
their discussion. One case was shown of two and
one-half year duration with very decided improvement
following treatment.

Following Dr. Pettit a still more encouraging dis-
course was given on the subject of tuberculosis. Major
points to be considered in the treatment of tuberculosis
was his subject. The subject was interestingly and
freely discussed by the visitors and members. Nine
members and twelve visitors were present.

A. R. Bogue, Secy.

Marriages

CASIMIR ARTHUR CYWINSKI to Miss Loretta
Lucille Konopa, both of Chicago, November 14.

HERMAN H. MAI, Chicago, to Mrs. Bertha
Eckert, September 18.

WILLIAM McCULLOCH TUTTLE to Miss Geneva
Duvall, both of Chicago, September 19.

CLARK LEE SHIPLEY, Paris, Ill., to Miss Ve-
ronica McCormick of Ambia, Ind., in Terre
Haute, July 15.

Personals

Dr. Samuel M. Feinberg, Chicago, addressed
the Will-Grundy Medical Society at Joliet, No-
vember 4, on allergy.

Dr. Walter L. Palmer, Chicago, addressed the
Peoria City Medical Society, November 3, on
"Peptic Ulcer: Experimental and Clinical Con-
siderations."

The Madison County Medical Society was ad-
dressed, November 6, by Dr. Leland B. Alford,
St. Louis, on "Treatment of the Common Neu-
roses."

Dr. Julian H. Lewis spoke on "Antigenic Re-
lationship of the Lipoids from Brain and Tes-
ticles" at the November 9 meeting of the Chicago
Pathological Society.

Dr. Clifford J. Barborka, Rochester, Minn.,
addressed the Peoria City Medical Society, No-
vember 13, on "Relation of Diet to Health
and Disease."

The Knox County Physician's Club was ad-
dressed by Dr. Aaron Arkin, Chicago, Novem-
ber 10, on "Pulmonary Diseases and Their Dif-
ferential Diagnosis."

The Bureau County Medical Society was ad-
dressed, November 10, by Drs. Leon Unger and
Edward A. Oliver, Chicago, on "Allergy" and
"Practical Points in Dermatology," respectively.

Dr. Allen B. Kanavel addressed the Medical
History Club of the University of Illinois Col-
lege of Medicine, November 4, on "The Value of
Medical History to the Student of Medicine."

A symposium on salpingitis was conducted be-
fore the Adams County Medical Society, Novem-
ber 9, by Drs. Frank Cohen, Earl L. Caddick
and Henry J. Jurgens, all of Quincy, and John
F. Ross, Golden.

The members of the Lake County Medical So-
ciety were the guests of the medical staff of the

U. S. Naval Hospital at Great Lakes, November 4; Lieut. Comdr. Morton D. Willcutts spoke on "Local Anesthesia."

Dr. Clarence M. Hincks, director, National Committee for Mental Hygiene, will address the annual meeting of the Illinois Society for Mental Hygiene, December 4, at the Chicago Woman's Club.

Dr. John E. Reed, Benton, was elected president of the Southern Illinois Medical Association at its annual meeting in Olney, November 5-6. The next session will be held in Carbondale.

The Chicago Society of Allergy was addressed, November 16, by Drs. Benjamin Z. Rappaport and Tell Nelson on "Effect of Air Filtration on Pollen Hay Fever and Asthma," and C. E. Barrett, "Atmospheric Pollen Studies."

The Chicago Gynecological Society was addressed, November 20, by Dr. William J. Dieckmann, St. Louis, on "Blood Volume Changes in Eclampsia," and Dr. Irving F. Stein and Miss Elizabeth Cope, "Trichomonas Vaginalis."

A symposium on prediction methods in criminology featured the meeting of the Chicago Academy of Criminology, November 12; the speakers were Ernest W. Burgess, Ph. D., and Clark A. Tibbits of the University of Chicago, and Dr. John A. Larson of the Institute for Juvenile Research.

Max Poser, Ph. D., Rochester, N. Y. addressed the Chicago Ophthalmological Society, November 16, on "Importance of Elimination of Astigmatism in Oblique Pencils and the Character of the Various Types of Corrected Lenses Pertaining to This Subject" and Dr. Theodore M. Shapira, "Heteroplastic Ossification. A Report of Two Cases of Bone Formation in the Choroid."

Doctor R. W. McNealy addressed the Academy of Medicine, Terre Haute, Ind., on "Blood Vessel Surgery, Past and Present," November 6, 1931.

Dr. Tom A. Williams of Washington has removed to the Esplanade, Miami Beach, Fla.

Dr. Melbourne Mabey (Northwestern, 1911), director of the Postgraduate Hospital gynecological clinic since 1919, resigned from that post on November 15 to become associated with the surgical division of the Santa Ana Clinic, of Santa Ana, California, of which Dr. Frank H. Paterson is the president.

News Notes

—The fifty-seventh annual meeting of the Southern Illinois Medical Association was addressed in Olney, November 5-6, among others, by Drs. Louis R. Wayman, Murphysboro, on "Appendicitis in Childhood"; Charles A. Elliott, Chicago, "Management of Edema"; Robert F. Lischer, Mascoutah, "The Social Evil," and Millard F. Arbuckle, St. Louis, "Diagnosis of Acute Mastoiditis in the Absence of the Classical Signs and Symptoms."

—At the Annual meeting and Clinic of the Chicago Dental Society, January 18-21, 1932, Dr. John A. Higgins, of the Department of Pharmacology, University of Illinois College of Medicine, will give a clinic on "Local Anesthetics and Hypnotics—Used in Dentistry," on January 18, at 2 o'clock.

—Dr. Amante Rongetti began his sentence in the United States Penitentiary at Leavenworth, Kan., October 17, having been found guilty of violation of the Harrison Narcotic Act and sentenced, October 2, to serve three years in prison. The U. S. Supreme Court, October 26, denied the plea of Dr. Rongetti for a review of the Illinois Supreme Court's decision affirming his conviction on a charge of manslaughter, according to press reports. Rongetti was sentenced, Aug. 12, 1930, to imprisonment from one to fourteen years for manslaughter on a charge of causing a death by an illegal operation. In his first trial, Rongetti was sentenced to death. When the supreme court granted a new trial, he was found guilty of manslaughter. The recent decision of the U. S. Supreme Court is the result of Dr. Rongetti's appeal, it is reported.

—Memorial Exercises for the late Dr. D. A. K. Steele, one of the founders of the College of Physicians and Surgeons of Chicago, afterwards the College of Medicine of the University of Illinois, will be held in the Assembly Hall, Room 106, in the new Medical and Dental Laboratory Building of the University of Illinois, 1853 West Polk Street, on Thursday, December 11, at 4 P. M.

For many years, Dr. Steele was President of the Corporation of the College of Physicians and Surgeons, and Head of the Department of Surgery in the College of Medicine of the University

of Illinois. He was Dean of the Faculty from 1914 to 1917. Dr. Steele died July 19, 1931 at his home in Sarasota, Florida.

President Harry W. Chase of the University of Illinois will preside, and the speakers will be Dr. William M. Harsha, Dr. Edward Louis Heintz, and Mr. William H. Browne; Catherine Eleanor Browne Kramer will sing.

Deaths

HARRY E. BECKER, Quincy, Ill.; Hahnemann Medical College and Hospital, Chicago, 1905; member of the Illinois and State Medical Society; aged 62; died, October 25, of cerebral hemorrhage.

FRANK C. CAMPBELL, Xenia, Ill.; University of Louisville, Medical Department, 1896; aged 59; died, May 9, following an operation for gall stones, at Olney Sanitarium.

JAMES E. COWAN, Galesburg, Ill.; Rush Medical College, 1874; former member of Illinois State Medical Society; aged 82; died, November 10, of myocarditis.

CHARLES M. HENN, Chicago; Hahnemann Medical College and Hospital, Chicago, 1890; aged 82; died, October 10, of myocarditis, endocarditis and cardiac asthma.

LEONARD JONATHAN HENSLER, Carrollton, Ill.; Vanderbilt University School of Medicine, Nashville, 1908; aged 46; a Fellow, A. M. A.; died, May 7, at St. Anthony's Hospital, St. Louis, Mo.

JOHN ALEXANDER KINLOCH, Chicago; L. R. C. P., Edinburgh, L. R. C. S., Edinburgh, and L. R. F. P. S., Glasgow, 1886; McGill University Faculty of Medicine, Montreal, Que., Canada, 1886; aged 70; died, in October, at Montreal.

SAMUEL WESTBROOK LATHAM, Eldorado, Ill.; Missouri College of Medicine and Science, 1901; a former member of Illinois State Medical Society; mayor of Eldorado several terms and State senator; aged 52; died, November 1, from injuries caused by a fall.

ROY B. LEACH, Joliet, Ill.; Rush Medical College, 1901; a Fellow, A. M. A., and former president of Will County Medical Society; on staffs of St. Joseph's and Silver Cross hospitals; aged 55; died, November 1, in Silver Cross hospital after a long illness.

JOSEPH J. LUMPP, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; aged 52; died, September 3, in the Cook County Hospital, of pulmonary tuberculosis and chronic myocarditis.

CHARLES MACDONALD, Oak Park, Ill.; Rush Medical College, Chicago, 1900; a Fellow, A. M. A.; member of the American College of Surgeons; on the staff of the Jackson Park Hospital, Chicago; aged 60; died October 31, of acute nephritis, lobar pneumonia and thrombophlebitis.

JAMES J. MCGUINN, Chicago; College of Physicians

and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the Illinois State Medical Society, and the American College of Surgeons; chief of staff of the John B. Murphy Hospital; aged 57; died, October 31, of intestinal obstruction.

HARRIET M. OWENS, Princeton, Ill.; Woman's Medical College of Pennsylvania, Philadelphia, 1892; aged 59; died, August 8, in the Seaside Hospital, Long Beach, Calif., of bronchial asthma and bronchopneumonia.

FRED DUNHAM PRATZ, Moweaqua, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; a Fellow, A. M. A.; aged 61; died, October 23, of heart disease.

WALTER FORBYCE REYNOLDS, Barry, Ill.; St. Louis College of Physicians and Surgeons, 1893; Jefferson Medical College of Philadelphia, 1894; member of the Illinois State Medical Society; aged 59; died, October 31, in St. Mary's Hospital, Quincy, following an operation for gallstones and appendicitis.

DANIEL WESTON ROGERS, Highland Park, Ill.; Northwestern University Medical School, Chicago, 1894; a Fellow, A. M. A.; formerly president of the board of health, Highland Park; aged 65; died, October 30, in the Highland Park Hospital, of carcinoma of the pancreas.

JOSEPH XAVIER RYAN, Chicago; Loyola University Medical School, 1924; aged 31; died, November 23, from tetanus from an infected blister on leg.

GEORGE STEELY, Danville, Ill.; College of Physicians and Surgeons, Boston, 1905; a member of Illinois State Medical Society; veteran of the World War; aged 52; died, November 14, following an operation for appendicitis.

STEWART CRAIG THOMSON, Byron, Ill.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1897; member of the Illinois State Medical Society; mayor of Byron; aged 61; died, October 30, in a hospital at Rockford, of injuries received when the automobile in which he was driving was struck by a train.

GEORGE WASHINGTON WEBSTER, Chicago; Chicago Medical College, 1882; a Fellow, A. M. A.; at one time professor of physical diagnosis, clinical medicine and internal medicine at his alma mater; past president of the Illinois State Board of Health; formerly on the staffs of the Wesley Memorial Hospital and the Mercy Hospital; aged 74; died, November 7, in Rochester, Minn., following an operation for carcinoma of the sigmoid.

FRANK WORDEN, Alton, Ill.; St. Louis Medical College, 1876; aged 77; died, August 19, of cerebral arteriosclerosis.

CORRECTION

Dr. George Washington Campbell Is Not Dead

The report of the death of Dr. George Washington Campbell of Flora, Ill., in The August JOURNAL was erroneous. The decedent was Frank C. Campbell of Xenia.

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The usual custom is to give one to three ounces of this mixture every hour or two until the stools lessen in number and improve in character. The food mixture may then be gradually strengthened by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually employed in normal conditions. Finally the fat of the milk may be gradually replaced, but as milk fat is likely to be digested with much difficulty after an attack of diarrhea it is good judgment to continue to leave out the cream until the baby has fully recovered.

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<i>Arsenic</i>	Not over .0026% as As. or .001% as As ₂ O ₃ .	None
<i>Heavy Metals</i>	Not more than a trace	None
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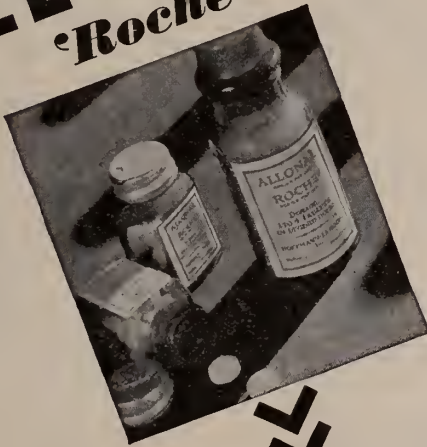
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POSTOPERATIVE PULMONARY HYPO-VENTILATION

Evidence is presented by Richard H. Overholt, Philadelphia (*Journal A. M. A.*, Nov. 15, 1930), that a marked degree of pulmonary hypoventilation exists for a variable period of time after abdominal operations. Thoracic volume is decreased and expansion of the lower lobes is prevented by a high position of the diaphragm. A restriction of the diaphragmatic excursions contributes to the faulty aeration of basal portions of the lung. The opening of the abdominal cavity and the entrance of air permits the negative intrapleural pressure to draw the diaphragm higher in the thorax. Besides this mechanical factor, a reflex splinting of the abdominal musculature because of pain is also important in effecting the altered status of diaphragmatic activity after operation. Rational postoperative treatment should include all measures that tend to overcome the faulty ventilation of the pulmonary tissue. Pain should be controlled by the adequate administration of morphine. A method of abdominal closure that will partially overcome pressure disturbances before the diaphragm is suggested.

METASTATIC MELANOMA OF BOTH EYES

Frederick C. Cordes and Warren D. Horner, San Francisco (*Journal A. M. A.*, Aug. 30, 1930), report a case of metastases to both eyes from a cutaneous melanoma. This was a congenital nevus of the skin which apparently caused no difficulty until it was irritated by scratching. Following this, a rapid growth took place, and one year after its removal the patient died of multiple metastases effecting nearly every organ of the body. In the eyes there was involvement of both ciliary bodies, the optic nerve of one eye and an isolated tumor in the angle of the iris. The choroid was normal. Isolated metastases to the ciliary body and iris without disease of the choroid are unusual. Careful search of the literature has revealed only three similar cases. In all these cases and in the one reported here, metastases appeared in the eye one year after removal of the skin nevus. In the three cases previously described the tumors were termed melanosarcoma, while at the present time the tendency of pathologists is to classify them primarily as melanocarcinomas.

HUMAN CONSTITUTION IN RELATION TO GASTRO-INTESTINAL DISORDERS

Julius Friedenwald, Baltimore (*Journal A. M. A.*, Sept. 27, 1930), emphasizes the importance of a better understanding of the human constitution in its relation to diseases of the gastro-intestinal tract. He says that not only must inherited (genetic) factors be considered, but also environmental influences as well as a means of determining and interpreting clinical phenomena. The period is fast being approached in this country in which this branch of medicine is rapidly gaining the recognition it deserves. Much has been accomplished, much more still remains, not only in more clearly determining the significance of these constitutional inadequacies but also in establishing more normal relations.

TURN ABOUT IS FAIR PLAY

A professor twice married has a young daughter whose tastes are mathematical, while his son, with no gift for numbers, has strong ideas of justice.

"Papa," asked the little girl one day, speculating on the possible combinations of fractional sisterhood and brotherhood, "if mother were to die and you were to marry again and have some more children, what kin would they be to my half-sisters?"

Before the professor had time to reply, small son volunteered an answer.

"I think," said he, with an air of finality, "that if anybody's going to die, it's papa's turn this time."

—Country Gentleman.

HEREDITY

"Talking of hens," remarked the American visitor, "reminds me of an old hen my dad once had. She would hatch out anything from a tennis ball to a lemon. Why, one day she sat on a piece of ice and hatched out two quarts of hot water!"

"That doesn't come up to a clubfooted hen my mother once had," remarked the Irishman. "They had been feeding her by mistake sawdust instead of oatmeal. Well, sir, she laid twelve eggs and sat on them, and when they hatched eleven of the chickens had wooden legs and the twelfth was a woodpecker."

OSTEOMYELITIS OF SKULL

Fletcher D. Woodward, University, Va. (*Journal A. M. A.*, Sept. 27, 1930), asserts that most cases of osteomyelitis of the skull that result from frontal sinus infection are due to *Staphylococcus pyogenes-aureus*. When they are due to this type of infection, the pathologic picture is fairly constant. Operation should be prompt and radical. Surgical solution of chlorinated soda is advocated in their treatment.

STIMULANTS IN OLD AGE

Osborn in the *Medical Journal and Record* says that caffeine in any form, when taken by elderly people, tends to increase nervous irritability and uric acid production and raise the blood-pressure.

Alcohol, in small quantities, tends to quiet the brain and nerves and equalize the circulation; it also has some food value.

Alcohol is preferable to tea and coffee as a mild stimulant for the old.

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Three cases of emphysema complicating tonsillectomy are reported by Frederick H. von Hofe, East Orange, N. J. (*Journal A. M. A.*, Sept. 27, 1930). It seems possible that this condition may be brought about as follows: 1. The air may enter the tissue following perforation of the tonsillar fossa bed. 2. The air may enter the tissues following perforation of lung vesicles. 3. It is possible that air may enter the tissues after being forced into Wharton's duct and thence diffused.

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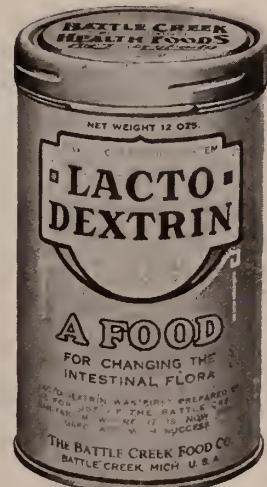
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Hertzler, A. E., Neb. St. Med. Jour. 1931, Vol. 15, P. 1.

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Book Review

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 14, Number 6, and INDEX VOLUME. (New York Number—May, 1931.) Octavo of 300 pages with 55 illustrations. Per Clinic year, July, 1930, to May, 1931. Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1931.

The contributors to this number are Drs. Andrews, Bader, Baldwin, Belcher, Block, Blumgarten, Chickering, Connery, Craig, De La Chapelle, Friedman, Goldbloom, Goldring, Goldstein, Graef, Held, Highman, Kugelmass, Lintz, Loeb, McNitt, Pugh, Ralli, Rittenberg, Rosenbluth, Squires, Stillman, Sturtevant, Tenney, Wise.

THE DOCTOR AND HIS INVESTMENTS. By Merille Stanley Rukeyser. Philadelphia: P. Blakistons Son & Company, Inc. Price, \$2.50 net.

Unlike other books on investments, this volume deals exclusively with the financial problems of physicians. It envisages stocks, bonds, insurance policies, and savings accounts only as instruments which serve the doctor's ends. At all times the human needs are kept in the forefront.

We believe that this book will render valuable service to the profession. There is certainly no more appropriate time to assimilate the vital facts it contains than the present.

This work the author has answered thousands of questions for physicians who have realized that expert financial advice is a necessity for the average doctor just as expert medical advice is necessary for the average layman.

CLINICAL DIETETICS. By Harry Gauss, M. D. Illustrated. St. Louis: The C. V. Mosby Company. 1931. Price \$8.00.

This work is intended as a text book for physicians, students and dietitians. In the selection of material used in this work only those diets for which a rational basis exists, have been considered; empiric diets with a few exceptions have been disregarded.

AN INTRODUCTION TO GYNECOLOGY. By C. Jeff Miller, M. D. Illustrated. St. Louis: The C. V. Mosby Company. 1931. Price \$5.00.

This work is intended for the use of beginning students, it is arranged in sixteen sections. It includes only the essentials of the subject, and therapy has not been considered.

TEXT-BOOK OF HISTOLOGY. By Eugene C. Piette, M. D. With 277 illustrations, some in color. Philadelphia: F. A. Davis Company. 1931. Price \$4.50.

This work is intended for medical and dental students. It aims to reflect present day knowledge in a most condensed form.

OBSERVATIONS ON EFFICIENCY OF COMMONLY USED HYPNOTICS

G. P. Grabfield, Boston (Journal A. M. A., May 30, 1931), describes the observations he made in a comparison of the efficiency of commonly used hypnotic drugs. It occurred to him that a rough index of efficiency might be obtained by prescribing half the amount of the recommended doses and noting the number of doses that were required to produce a comfortable night's sleep. In this way the number of patients used, divided by the number of doses required, would give a rough index of efficiency. If the accepted dose, under such circumstances, was the correct one the indexes should run about 50 per cent. In deciding on the dose either half the pharmacopeial dose or half the dosage recommended by the manufacturer, in the case of a proprietary drug, was used. While the indexes were much higher, this method proved satisfactory. Two series of experiments were done, in the first of which a senior house officer was asked to prescribe the drug by name, and in the second one of which he was given the drug in a numbered bottle to be dispensed in the ward according to a given dosage. The drugs selected are either in the U. S. Pharmacopeia or in the accepted list of New and Nonofficial Remedies. In only one case did the newer drug show any great advantage over the older ones of the same chemical group, and that was in the case of sabromin, which has certain chemical features that differentiate it from other bromide hypnotics, but the slightly increased efficiency does not compensate for the greatly increased cost. From his observations the author concludes that chloral hydrate in small doses and barbital are the most effective and cheapest non-alkaloidal hypnotics available today. He also emphasized the fact that satisfactory results are obtained with much smaller doses than are customarily used.

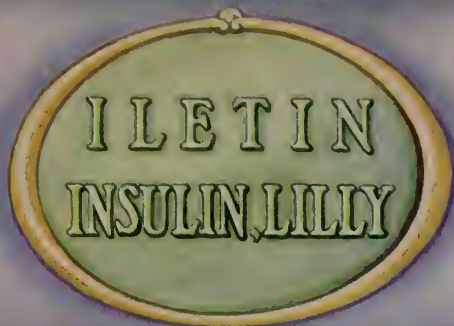
THE PHYSICIAN'S FUTURE

Speaking on hospitals and their trend before the New York County Medical Society, Terry M. Townsend, M. D., said:

"Hospital clinics, welfare organizations and all subsidiaries that skirt the outer edge of our profession can materially aid us in our present unsatisfactory economic condition. They can educate their trustees, contributors and all who come to their doors that the doctor is worthy his fee. They can impress on all within their sphere of influence that physicians must eat, clothe themselves and their dependents, live and die as other mortals and that these phenomena require coin or government notes.

"The continued pauperization of their middle class, upon whom the physician is dependent, will drive us either to State medicine or to starvation. As neither path is pleasant, we must hew another through the darkness. State medicine would injure the hospital because it would injure the physician. The ambition to discover new knowledge would be gradually stifled and individual initiative would not rise to new levels; am-

(Continued on Page 18)



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Discussing the treatment of subacute and chronic cases, the author states:

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★"The Treatment of Arthritis"—Dr. Stanley Fahlstrom, Feb. 1931 issue of *Archives of Physical Therapy, X-Ray, Radium with International Abstract*, from the Arthritis Clinic, Dept. of Medicine, Loyola University School of Medicine and Mercy Hospital, Chicago.

(Continued from Page 16)

bition and individual initiative should remain as price-less incitants to progress.'

"Whether it be communistic, group insurance, deferred payment, or additional clauses in health and accident policies, this great shock absorber so universally used in other phases of modern life can be made applicable to reasonable compensation of the hospital and the physician in event of illness or accident."—*New York Times*.

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There are over 7,000 hospitals in the United States.

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In 1930 they contributed 278,634,430 hospital days.

They admitted 12,000,000 patients to their wards in 1930.

They are staffed by 98,500 physicians.

Thirty-one and four-tenths per cent. of all hospital work is given to the care of charity patients.

There are 650,000 infants born in the hospitals each year.

Their out-patient departments recorded 32,000,000 patient visits.

Sixty-two thousand five hundred students are enrolled in their nurses' training schools.

They employ 54,000 graduate nurses.

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In excess of \$3,000,000,000 is invested in hospital buildings and properties.

Eight hundred and fifty million dollars is spent annually in their operation.

The total amount of hospital endowment is estimated at \$439,000,000.

Four hundred and nineteen millions of this endowment belong to non-profit hospitals.

The income from this amount would support 13,967 beds out of the 247,970 in this group.

Only 1,060 hospitals control any endowment.

One hundred and twenty-five hospitals control 45 per cent of the total endowment.

Thirty-one hospitals have endowments of \$2,000,000 or more each.

The government owned and operated hospitals are distributed as follows:

288 Federal hospitals with 63,581 beds.

281 state hospitals with 405,309 beds.

505 county hospitals with 73,615 beds.

364 city hospitals with 63,064 beds.

74 city and county hospitals with 11,500 beds.

The non-government hospitals are distributed as follows:

1,017 church hospitals with 116,846 beds.

1,620 individually owned or partnership hospitals with 199,818 beds.

2,047 independent hospitals with 110,198 beds.

An average of 68,989 out of the total of 619,726 beds in government owned hospitals, or 11.5 per cent. were vacant in 1930.

An average of 121,498 out of the total 336,198 beds in non-government hospitals, or 39 per cent., were vacant in 1930.

THE A. M. A. COUNCIL ON MEDICAL EDUCATION AND HOSPITALS SAYS THAT:

In 1930 licenses to practice medicine were issued by state licensing boards to the number of 7,548.

There are 6,719 registered hospitals, and 540 not on the register.

There are 955,869 hospital beds.

The total patient days in the hospitals in continental United States for 1930 was 278,634,430, an increase of 13,364,840 in two years.

The annual gain in capacity of hospitals has been at the rate of more than 20,000 beds a year for more than twenty-one years.

The number of physicians—including staff members, residents, interns and superintendents—connected with hospitals was 98,491 in 1930.

The total average number of beds unoccupied constantly in all hospitals in 1930 was 192,487.

Outpatient departments of hospitals increased from 678 in 1921 to 1,027 in 1929.

In 1929, 6,644,983 patients made 19,056,394 visits to outpatient departments, just twice as many as in 1921.

There are now 664 hospitals approved for interns. These hospitals have 201,974 beds and are served by 5,584 interns. There are 219 hospitals not yet on the approved list in which there are 510 interns.

The number of hospitals approved for residencies has grown from 270 in 1927, when the list was begun, to 349 in 1930 and 2,069 residencies are now provided in these hospitals.

There are 317 hospitals for nervous and mental patients under government control—federal, state, county and city—with a total rated capacity of 419,262 and with 400,395 patients. Such hospitals to the number of 244 are operated under other auspices, with a rated capacity of 18,317 and with an occupancy of 14,647. These figures are for continental United States.

The above statistical data can well be carefully studied in the consideration of several questions of great importance to the profession and to the public alike. Some of them have important bearing on the conditions of medical practice in the United States and on the facilities available to the public for securing medical and hospital service.

PERNICIOUS ANEMIA AS A DEFICIENCY DISEASE

It seems that there is a substance, free in liver and freed by gastric digestion in meats and probably in other foodstuffs, which is necessary for the formation of adult red blood cells; and that the lack of this substance, due to faulty gastric digestion, gives rise to the picture of pernicious anemia.—Dr. R. WEST, New York, in *Ann., Intern. Med.*, Aug., 1929.

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Very young infants with "true colic," or vagogenic gastro-enterospasm, in whom eczema develops later, are almost three times as numerous as those suffering from either condition alone. Both conditions probably have a common allergic basis.

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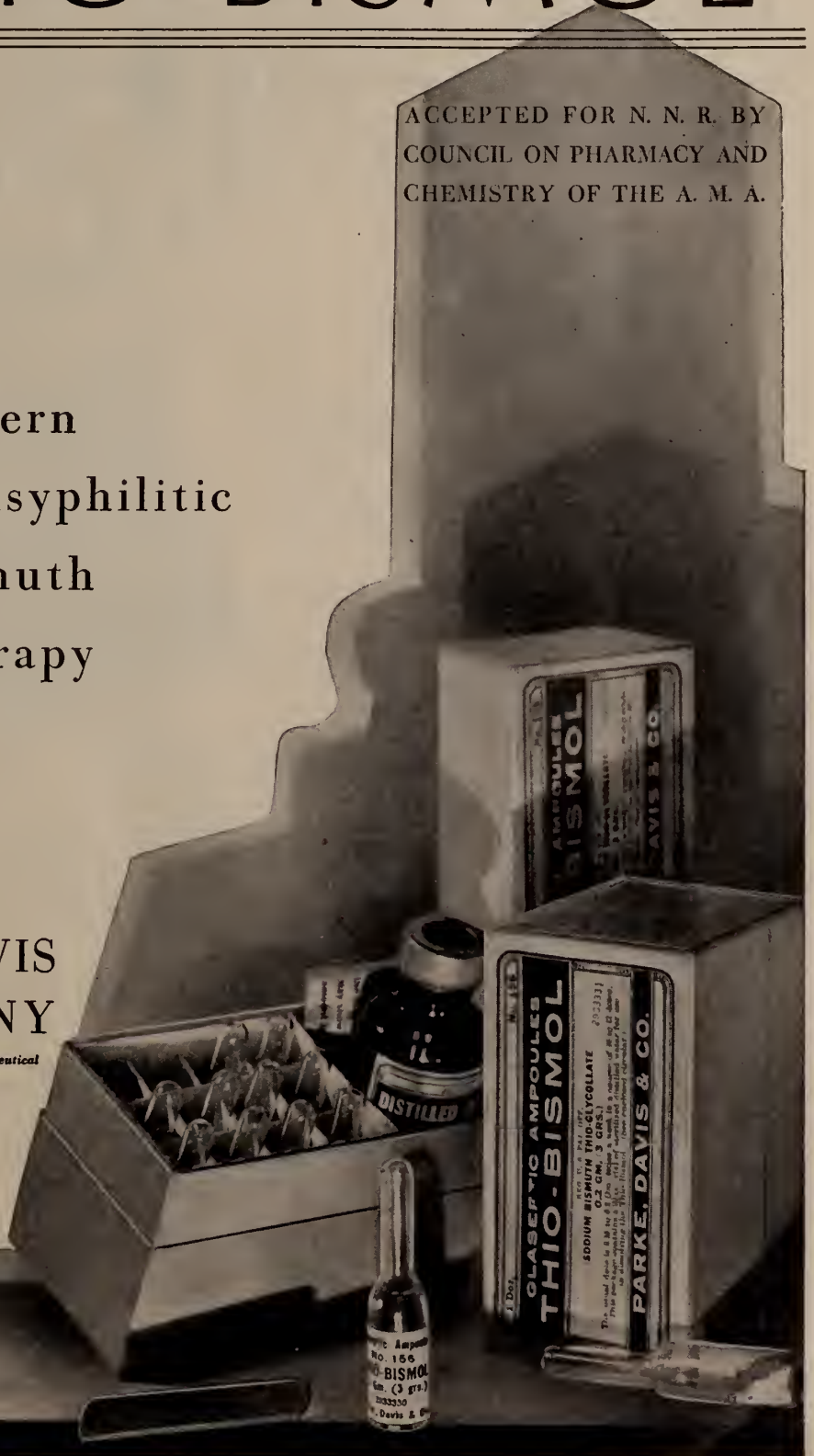
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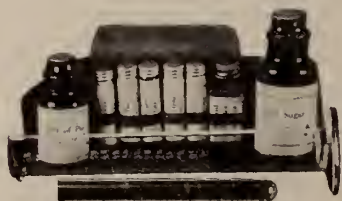
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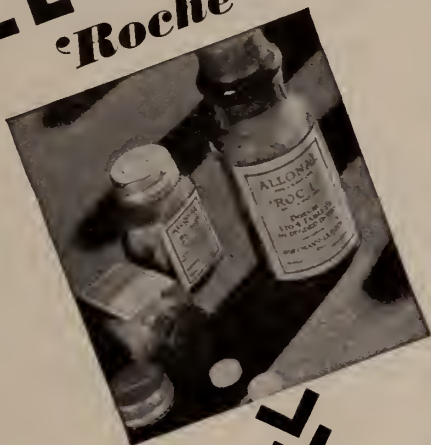
RECTAL CAUSES OF PAIN IN PENIS

Pain or burning at the end of the penis is frequently due to lesions in the rectum.—DR. LOUIS NAGORSKY, in *M. J. and Record*, Aug. 21, 1929.

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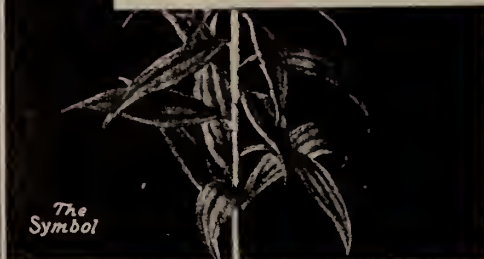
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Book Review

MEDICAL JURISPRUDENCE. By Carl Scheffel, M. D. Philadelphia: P. Blakiston's Son & Co., Inc. 1931. Price \$2.50 net.

This work is something new. Prevailing text discuss how medical matter affect or influence the solution of legal problems. This volume takes a diametrically opposite viewpoint and seeks to show how legal matters affect the physician in every day practice. It serves the profession as a whole and presents information of inestimable value to the physician that has never heretofore been available in easy reference book form.

MEDICINE, SCIENCE AND ART. STUDIES IN INTERRELATIONS. B. Alfred E. Cohn. Chicago: University of Chicago Press. 1931. Price \$4.00.

The essays collected in this volume are as follows: The Difference between Art and Science in Their Relations to Nature. The Development of the Harveian Circulation. Purposes in Medical Research. Medicine and Science. Physiology and Medicine. The Hierarchy of Medicine.

DIAGNOSIS IN JOINT DISEASE. By Nathaniel Allison, M. D., and Ralph K. Ghormly. New York: William Wood & Company. 1931. Price \$9.00 net.

This work covers a clinical and pathological study of arthritis. The work covers the experience of the authors gained on the wards of a large general hospital and covers six years of study, during which time the authors have been able to obtain records in two and eighty-nine instances of arthritis. This volume brings the subject of arthritis up to date.

PROCTOSCOPIC EXAMINATION AND THE TREATMENT OF HEMORRHOIDS AND ANAL PRURITUS. By Louis A. Buie, B. A., M. D., F. A. C. S., Section of Proctology, The Mayo Clinic, Rochester, Minnesota, and Associate Professor of Surgery, The Mayo Foundation, University of Minnesota, Minneapolis, Minnesota. Octavo of 178 pages with 72 illustrations. Philadelphia and London: W. B. Saunders Company, 1931. Cloth \$3.50 net.

This book is offered as a manual of consulting room diagnosis of diseases of the anus and rectum and the treatment of hemorrhoids. It is practical and sound.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 11, No. 3. (New York Number—June, 1931.) 239 pages with 73 illustrations. Per clinic year (February, 1931, to December, 1931) Paper, \$12.00; Cloth, \$16.00. Philadelphia and London: W. B. Saunders Company, 1931.

The contributors to this number are Drs. Bancroft, Bartley, Beekman, Berg, Darrach, Davidoff, Donovan, Dudley, Frankfeld, Heyl, Hinton, Kennedy, Lilienthal, Lowry, Mac Fee, Mage, Milliken, Murray, Pugh, Scudder, Shore, Sneed, Stenbuck, Swift, Waters, Whitaker, Whitman.

A CLINICAL STUDY OF ADDISON'S DISEASE. By Leonard G. Rowntree M. D., and Albert M. Snell, M. D. Division of Medicine, The Mayo Clinic and The Mayo Foundation, Rochester, Minnesota. 12mo of 317 pages with 41 illustrations. Philadelphia and London: W. B. Saunders Company, 1931. Cloth, \$4.00 net.

In recent years an enormous literature has grown up concerning the function of the suprenal glands. This work summarizes the clinical and pathological knowledge of Addison's Disease and has brought up-to-date by comprehensive studies the work of all the students on this subject. Records available of some three hundred cases at the Mayo Clinic has been made during life, or extensive lesions of the suprarenal glands have been found at necropsy. From this group the authors have selected records of 108 cases. Clinical investigations have been carried out at the bedside and laboratory and other studies have been carefully made and summarized.

A new form of treatment has been used, which consists of applying intensive organotherapy with specific glandular products to the extent of the patient's tolerance. The remarkable results obtained in the crisis of the disease are presented.

THE COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION FOR 1930. Volume XXII. Edited by Mrs. Maud H. Mellish-Wilson, Richard M. Hewitt, B. A., M. A., M. D., and Mildred A. Felker, B. S. Octavo Volume of 1,125 pages with 234 illustrations. Philadelphia and London: W. B. Saunders Company, 1931. Cloth, \$13.00 net.

This work is a selection from the material available at the Mayo Clinic and the Mayo Foundation. Much of the work done at the foundation and clinic and many important papers in fields of pure science therefore have been selected to appear only by abstract or by title, and preference in assigning space has been given to papers which deal with practice.

Papers written in 1930 numbered 482 of these, 85 are reprinted in full, 35 are abridged, 55 are abstracted, and of 312 only the titles are given.

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued Serially, one number every other month.) Volume 15, Number 1. (Mayo Clinic Number—July, 1931.) Octavo of 263 pages with 56 illustrations. Per Clinic Year, July, 1931, to May, 1932. Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1931.

The contributions to this number are Drs. Allen, Alvarez, Barborka, Bargaen, Barker, Barnes, Bowers, George Brown, Philip Brown, Bumpus, Caldwell, Coleman, Comfort, De Carle, Eusterman, Furrer, Gaarde, Hartman, Hensch, Horton, Johnson, Kintner, Kirklin, Larson, Lemon, Charles Mayo, Maytun, Messick, Millet, Mueller, O'Leary, Rivers, Rowntree, Ryneanson, Smith, Snell, Stacy, Vincent, Weir, Wilbur, Willius.

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	Grams	Prot.	Fat	Carb.	Cal.
1 tablespoon Knox Sparkling Gelatine	7	6
1/4 cup cold water
1 1/3 cups hot water	....	....	....	....	....
1 teaspoonful whole mixed spices	....	....	....	....	....
1/2 teaspoon salt	....	....	....	....	....
1/2 cup vinegar	....	....	....	....	....
1/2 cup chopped cabbage	50	1	....	3	....
1/2 cup chopped celery	60	1	....	2	....
1/2 cup canned green peas	40	1	....	4	....
1/4 cup cooked beets cubed	40	1	....	3	....
Total	10	....	12	88	....
One serving	2	....	2	15	....

Soak gelatine in cold water for five minutes. Bring to boil water, salt and spices. Pour on gelatine to dissolve it and add vinegar. Strain and set aside to cool. When jelly is nearly set, stir in the vegetables, pour into mold and chill until firm. Unmold on lettuce leaf or shredded lettuce and serve with mayonnaise or salad dressing. Garnish with sprig of parsley or strip of pimento.

CHOCOLATE PUDDING

(Six Servings)

	Grams	Prot.	Fat	Carb.	Cal.
1 1/2 tablespoons Knox Sparkling Gelatine	10	9	....	....	....
1/4 cup cold water	....	....	....	....	....
2 cups milk	480	14	19	24	....
3/4 cup boiling water	....	....	....	....	....
1 square chocolate grated (1 oz.)	30	4	15	9	....
Pinch salt	....	....	....	....	....
Pinch cinnamon	....	....	....	....	....
1/4 teaspoon vanilla	....	....	....	....	....
1 gr. saccharin	....	....	....	....	....
Total	27	34	33	546	....
One serving	4.5	6	5.5	91	....

Soak gelatine in cold water five minutes. Melt chocolate in boiling water. Add gelatine and stir until dissolved. Add milk, salt, cinnamon, vanilla and saccharin. Stir well and chill. When nearly set, beat until frothy, mold and chill until firm. Serve plain or with thin cream or whipped cream.



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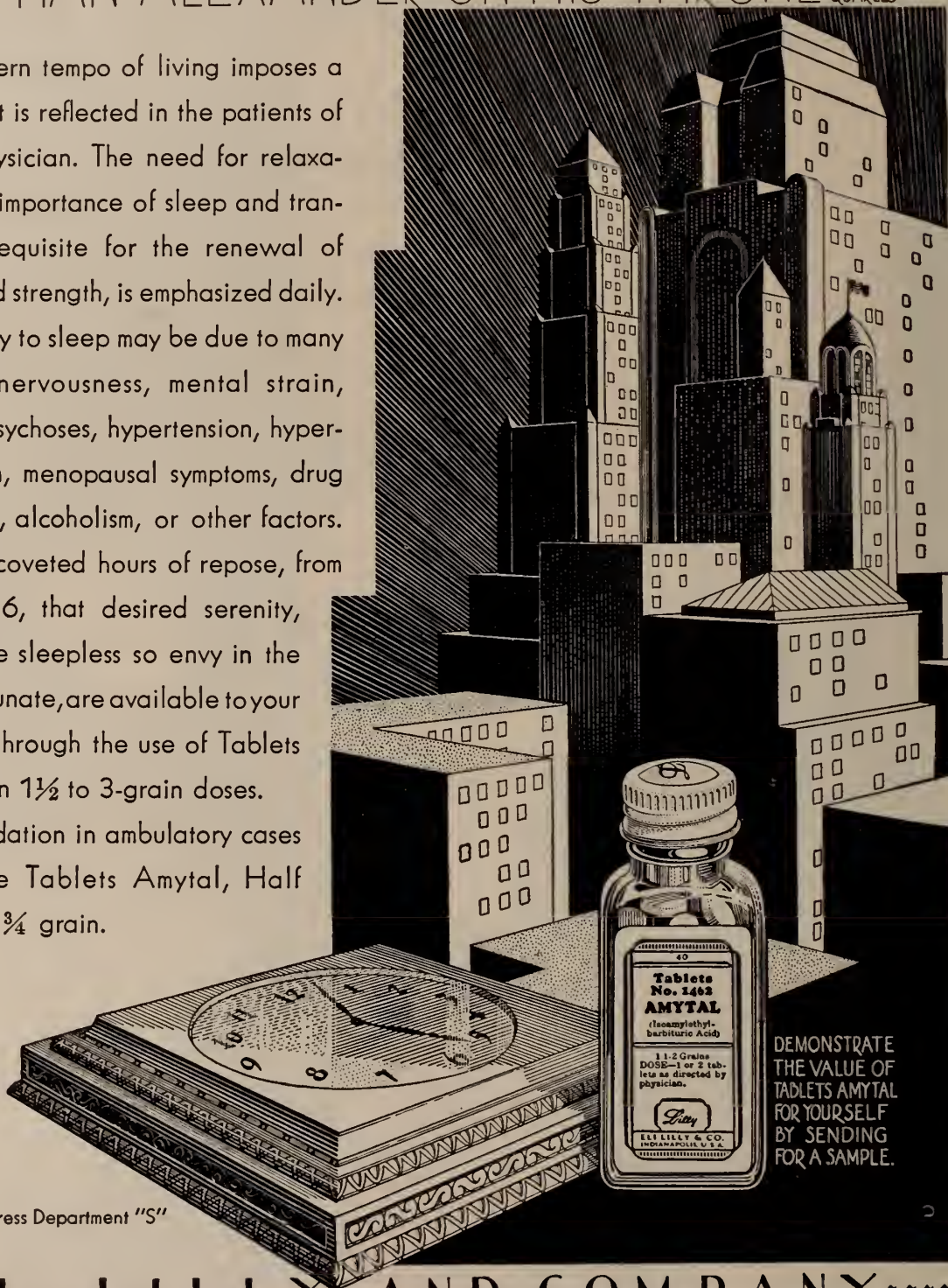
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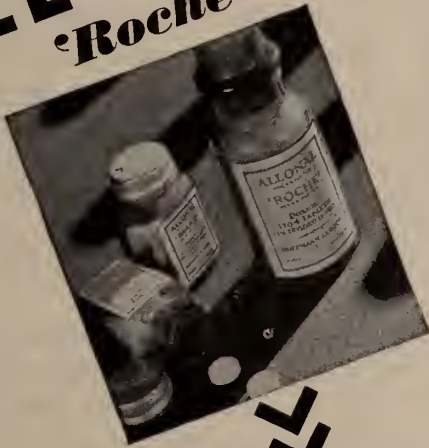
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
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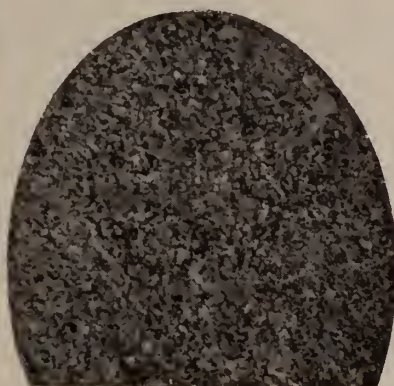
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IDENTIFYING the newly introduced form of Indian plantago seed which is now being supplied by the Battle Creek Food Company in a **clean wholesome form fit for human use.**

This is not ordinary plantago seed just as it comes from the producers abroad, but a highly refined product which has been subjected to a most efficient cleaning process including screening and fanning which re-

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When you prescribe Battle Creek Psylla you automatically rule out the inferior, uncleaned brands of seed and insure a maximum of desired bland bulk and lubrication for your patients.

Note there is an inner seal in each can which is a guarantee of its wholesomeness.

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Dept. IMJ-9-31, Battle Creek, Michigan


Send me, without obligation literature and trial tin of the new White Psylla for a test.


Name

Address


—THAT ENDS WELL


YOUR patient begins

with a tablespoonful  continues

with a teaspoonful  and finally

stops it altogether  Surely, there is

no clearer way to demonstrate  the therapeutic value of AGAROL

 in the treatment of constipation.

AGAROL is the original mineral oil and agar-agar emulsion with phenolphthalein. It softens the intestinal contents and gently stimulates peristalsis.

Besides, Agarol is so easy to take. No oiliness, no artificial flavoring to get used to. Agarol can be mixed with water, fruit juices, milk, with semi-solid food, used as a salad dressing in place of mayonnaise. Serves you better—serves your patient better.

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AGAROL *for Constipation*

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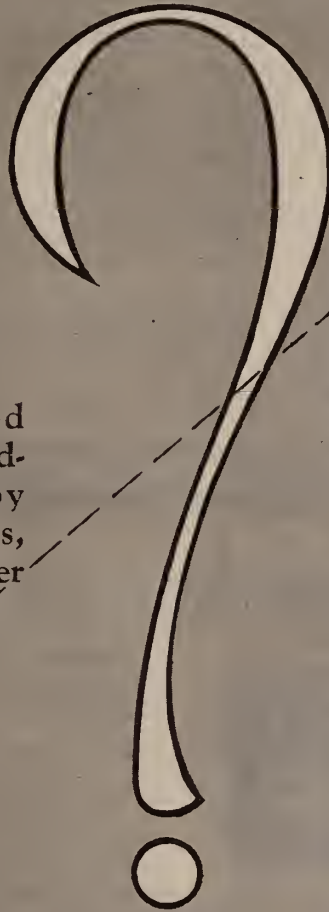
Never any dosage
directions in
any Mead
Products

We Know Which Side of *this* Question

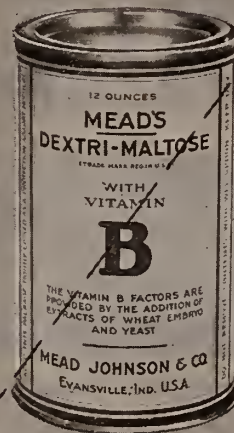
You Are On



Should mothers feed
their babies by free med-
ical advice given by
neighbors, newspapers,
manufacturers and other
busybodies — or —



Should the problem
of infant-feeding be
kept where it belongs
— in the hands of the
medical profession —



Is
It
Worth
While?

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your side of the question.

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MEAD'S DEXTRI-MALTOSE NOS. 1, 2 AND 3. MEAD'S DEXTRI-MALTOSE WITH VITAMIN B. MEAD'S CEREAL. MEAD'S POWDERED LACTIC ACID MILKS, NOS. 1 AND 2. MEAD'S ALACTA. MEAD'S POWDERED WHOLE MILK. MEAD'S POWDERED PROTEIN MILK. MEAD'S SOBEE. MEAD'S VIOSTEROL IN OIL 250 D. MEAD'S 10 D COD LIVER OIL WITH VIOSTEROL. MEAD'S STANDARDIZED COD LIVER OIL. MEAD'S POWDERED BREWER'S YEAST.

Summer Diarrhea

The following formula provides a means of supplying the principal fuel utilized in the body for the production of heat and energy and furnishes immediately available nutrition well suited to protect the proteins of the body, to prevent rapid loss of weight, to resist the activity of putrefactive bacteria, and to favor a retention of fluids and salts in the body tissues:

Mellin's Food . . . 4 level tablespoonfuls
Water (boiled, then cooled) . 16 fluidounces



The usual custom is to give one to three ounces of this mixture every hour or two until the stools lessen in number and improve in character. The food mixture may then be gradually strengthened by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually employed in normal conditions. Finally the fat of the milk may be gradually replaced, but as milk fat is likely to be digested with much difficulty after an attack of diarrhea it is good judgment to continue to leave out the cream until the baby has fully recovered.

Further details in relation to this subject and a supply of samples of Mellin's Food sent to physicians upon request.

Mellin's Food Company

Boston, Mass.

Elimination in obesity



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PLUTO WATER due to its valuable mineralization gives excellent results in the treatment of impaired function of the secretory organs; and of dysfunction of the ductless glandular system.

It stimulates to normal functional efficiency the action of the liver, of the kidneys, of the pancreas and of the entire gastrointestinal tract.

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Tempting the Appetite of the Convalescent!

Tempt the eye—and the winning of the appetite is well begun. The many appealing and nourishing dishes that can be prepared when Knox Sparkling Gelatine is combined with items in the convalescent diet are often found invaluable where the desire for food lags behind the body's need of it.

KNOX Gelatine dishes are often specified. This is because Knox contains no ready-prepared flavoring, coloring, or sweetening. It is pure granulated gelatine. An analysis

shows 85-86% protein content. Knox is therefore usually preferred to ready-prepared gelatine desserts which actually contain only about 12% gelatine. Pure granulated gelatine is regarded as readily digestible and quickly absorbed.

Knox has had an accredited dietitian prepare a number of recipes for gelatine dishes suitable to convalescent diets. We shall be glad to send you a quantity of these if you wish them.

WESTVILLE CREAM

(Six Servings)

	Grams Prot. Fat CHO. Cal.			
1½ tablespoonfuls Knox Sparkling Gelatine	10	9	..	..
¼ cup cold water .....	..	..	..	..
1 square chocolate, grated	30	4	15	9
¾ cup hot water .....	..	..	..	..
¾ cup milk	180	5	7	9
2 eggs	100	13	10.5	..
¼ cup cream, whipped	60	2	18	2
5 tablespoonfuls sugar	40	..	..	40
1 teaspoonful vanilla .....	..	..	..	..
Few grains salt .....	..	..	..	..

Total 33 50.5 60 826.5

Soak gelatine in cold water. Heat chocolate, water, milk and salt over hot water, then add gelatine and stir until dissolved. Separate eggs and beat egg yolks until lemon colored. Stir hot mixture slowly into egg yolks. Return to stove and heat over hot water until mixture thickens slightly. Remove from stove, add vanilla and chill until nearly set. Beat egg whites until stiff, fold into jelly, also whipped cream. Mold and chill until firm.

LEMON MIST

(Six Servings)

	Grams Prot. Fat CHO. Cal.			
1 tablespoonful Knox Sparkling Gelatine	7	6	..	..
¼ cup cold water .....	..	..	..	..
1½ cups hot water .....	..	..	..	..
Grated rind 1 lemon .....	..	..	..	..
¼ cup lemon juice	40	..	..	4
2 eggs	100	13	10.5	..
2 tablespoonfuls sugar	16	..	..	16

Total 19 10.5 20 250.5

Soak gelatine in cold water. Boil rind of lemon in water used for dissolving gelatine; add sugar; pour on soaked gelatine—stir until dissolved. Pour this into well beaten egg yolks. Return to stove and cook over hot water until mixture thickens slightly, stirring constantly—add lemon juice and pinch of salt. When nearly set fold into egg whites which have been beaten stiff. Mold and chill.

KNOX *is the real* **GELATINE**

IF you agree that recipes like the ones on this page will be helpful, write for our complete Recipe Book—it contains dozens of valuable recommendations for the convalescent diet. We shall be glad to mail you as many copies as you desire. Knox Gelatine Laboratories, 461 Knox Ave., Johnstown, N. Y.



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City

State



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Breaking up of Compounds to Set Iodine FREE
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IM-9.

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Literature: Intrav. Ampul ☐ Ethyl Iodide (inhalation) ☐

Dr.

Address

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For physicians who prefer ephedrine in combination with cooling, aromatic principles—in ounce and pint bottles

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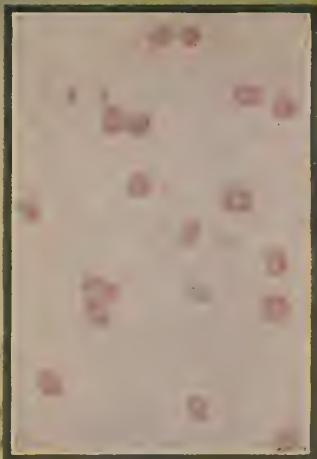
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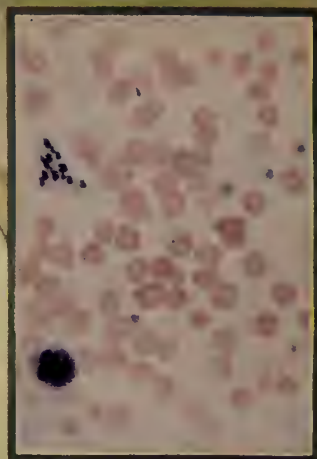
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INTRAMUSCULAR USE OF LIVER EXTRACT

Maurice B. Strauss, F. H. Laskey-Taylor and William E. Castle, Boston (*Journal A. M. A.*, Aug. 1, 1931), present preliminary observations from which it appears that the intramuscular use of liver extract has all the theoretical advantages of the intravenous method and is decidedly practical both from a therapeutic and from an economic standpoint. Furthermore, some patients apparently prefer to inject a small quantity of liver extract intramuscularly rather than to ingest a large quantity of liver or to take an extract by mouth which is not altogether palatable. From the preliminary observations it seems possible that the extract necessary for a week's treatment when taken by mouth may, if given daily by intramuscular injections, suffice for from five to six months. The intramuscular method may be of even greater advantage in those cases requiring unusually large doses of extract by mouth or actually a life-saving measure in severely ill patients. The adequate treatment of cord lesions requiring large amounts of liver extract may be greatly simplified by the parenteral injection of liver extract alone or as an accessory to oral therapy. The authors describe a method of preparing an extract of liver suitable for intramuscular injection and highly potent in pernicious anemia. Maximal reticulocyte responses were obtained from the daily intramuscular injection of the extract derived from 10 gm. of liver. The potential therapeutic and economic advantages of this method are suggested.



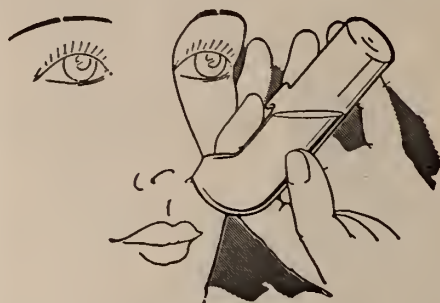
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Try in your own eyes or nose.

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Taunton, Mass.

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Gentlemen: Please send me a sample of ALKALOL.

Dr.

Address I. M. J.—J.

PSYCHOCHEMISTRY: SOME PHYSICO-CHEMICAL FACTORS IN MENTAL DISORDERS

Walter Freeman, Washington, D. C. (*Journal A. M. A.*, Aug. 1, 1931), states that the application of another of the fundamental sciences to the study of behavior, namely biochemistry, is being witnessed today, and the designation psychochemistry is the natural result. Advances in a science emanate from those who, already versed in two different disciplines, work in the field of knowledge lying between them. Mere collaboration of two different experts will not be so productive, since neither can be completely in sympathy with the point of view of the other. Few biochemists are versed in psychiatry, however, and few psychiatrists have more than a bowing acquaintance with such terms as colloidal dispersion, interfaces, ionic dissociation and oxidation-reduction. Psychochemists, therefore, will be grounded in biochemistry as well as in psychiatry and will investigate the problems of normal and abnormal behavior from the standpoint of altered chemical reactions in that master tissue of the body, the central nervous system. The failure of microscopy to demonstrate structural alterations in the so-called functional psychoses is driving the investigator into new channels of research. The results of this activity are just beginning to appear and will grow tremendously in volume. What future accomplishments may be witnessed are beyond human power to foretell. Dementia præcox, manic-depressive psychosis, paranoia, epilepsy represent four groups of disorders that rest on no constant well-

defined alteration in the histology of the nervous system. None can doubt, however, that there exists an underlying structural deviation, provided such a definition is pushed to its logical limits to include molecular and ionic imbalances. Probably the changes are much more gross than that and will be readily demonstrable when proper methods are applied. Such work as that already performed is sufficient to enable one to erect hypotheses concerning the probable underlying physicochemical mechanisms concerned in some of these major abnormalities. Most clearly indicated is the role of water balance in epilepsy, although this also involves such mechanisms as hydrion concentration, oxidation-reduction and salt equilibrium. Moreover, the role of defective oxidation in the nervous system in schizophrenia also rests on considerable evidence, and the striking parallels, from the chemical standpoint, between the phases of manic-depressive psychosis and the hibernation cycle of certain mammals, point to some phasic alteration in colloidal dispersion and electric potential. In view of its newness the author makes a survey of the field, and the possibilities of its further development. He emphasizes that there are certain biochemical processes associated with disorders of behavior, and that if one is equipped with a knowledge of their workings one may be able, by supplying deficiencies, by preventing excesses, by controlling periodic shifts in various equilibriums, to bring about artificially conditions that approach the normal. The psychochemist has a large order.

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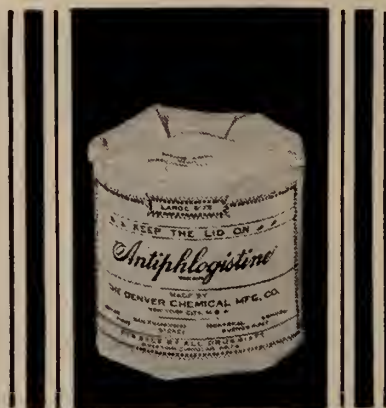
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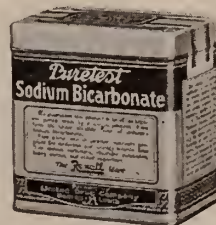
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This box contains 30 individual doses in glassine envelopes. (A teaspoonful to a dose.) This offers great convenience to those who find frequent doses necessary as an Antacid and Stomach Sedative.



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PROTEINS (Peptones and Propeptones)	5.25%
LACTOSE AND DEXTROSE	11.3%
CANE SUGAR	2.5%
MINERAL CONSTITUENTS (Ash)	0.95%

It acts as a bronchial sedative and expectorant, exhibiting a peculiar ability to relieve *Bronchitis—acute or chronic*. It checks as well a persistent winter cough and without harsh or untoward effect. It is agreeable to the palate and acceptable to the stomach—with merit as an intestinal antiseptic.

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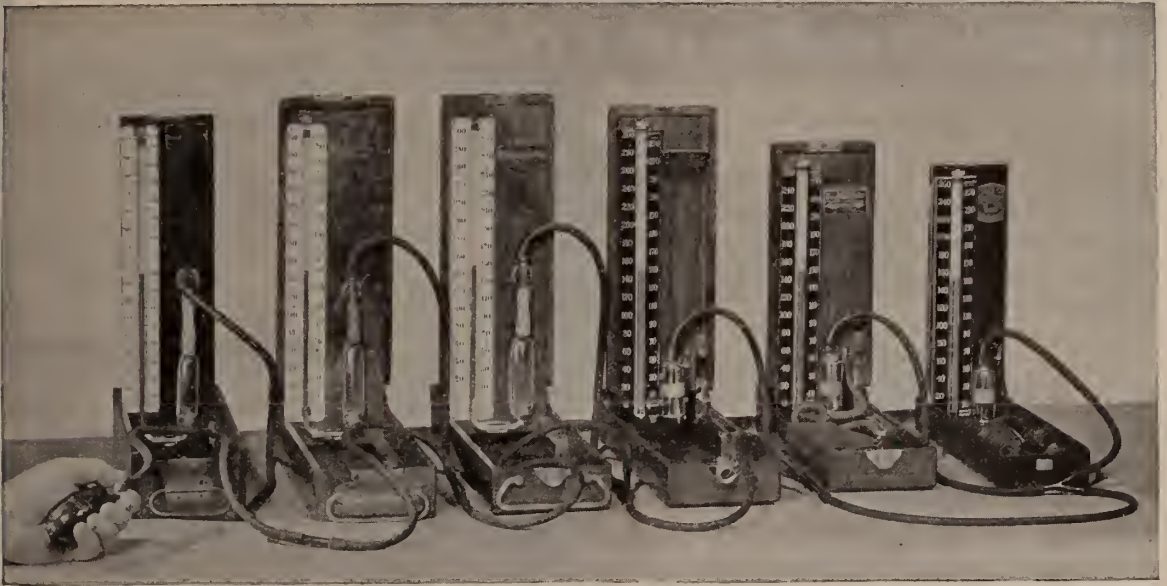
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SIGNIFICANT HEMORRHAGIC RETINAL LESIONS IN BACTERIAL ENDOCARDITIS (ROTH'S SPOTS)

William Brown Doherty and Max Trubek, New York (*Journal A. M. A.*, Aug. 1, 1931), call attention to the fact that the characteristic elliptic retinal hemorrhages with white centers occur in the bacterial endocarditides, acute and subacute, and in the severe anemias, notably pernicious anemia. The discovery of this lesion because of its significant appearance may aid in early diagnosis. The lesion occurs in both eyes, with a little greater frequency in the left eye. The lesion has little prognostic value in subacute bacterial endocarditis; in several instances it had appeared and disappeared in successive crops many months before death. The au-

thors suggest that the designation "retinitis of endocarditis" might after further study be appropriately applied.

The profession of medicine has to battle with one of the strongest influences in American democracy, the tendency to emphasize wealth as the center of power, and advertising as a means to this achievement. In medicine, if one may advertise all should advertise, and in the confusion and chaos thus produced our sick and afflicted will be lured into the ministrations of the man or institutions with largest purse regardless of ability or competence.—Charles B. Reed, M. D., *The Bulletin of the Chicago Medical Society*.



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Epilepsy: For average adult cases, one $1\frac{1}{2}$ grain tablet at night. In more severe cases, an additional tablet in the morning, and sometimes also in the afternoon. In status epilepticus, subcutaneous or intravenous injection of 2 to 5 grains (solution prepared with sterile powder in ampules).

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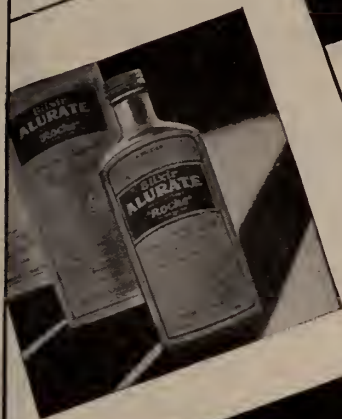


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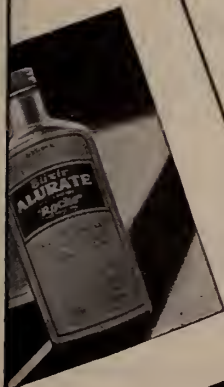
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*AGAROL is the original
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 emulsion with phenol-
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"Regular bowel movements daily." That will
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The liberal use of cow's milk in the child's diet is desirable for its calcium and phosphorus content when its well-known deficiencies in iron and vitamin B (F) are made good with Mead's Cereal

THE Journal of the American Medical Association¹ based on recent research by Sherman and Booher², raises the question as to whether the relatively large consumption of milk (up to a quart a day) should be routinely recommended, on account of the deficiency of milk in iron and the resultant relation to anemia. On the other hand, if the milk ration is

decreased and ordinary cereals substituted, not only is the iron deficiency far from being made good, but there remains the well-known fact that most cereals are seriously deficient in calcium and vitamin G. Fortunately, the recent development by the Pediatric Research Foundation of a new cereal, which when

used with milk not only makes good its iron and vitamin B deficiencies, but also supplies what no other cereal supplies in such outstandingly abundant measure—calcium, phosphorus, copper and vitamins A, E and G. This new cereal was devised in the Research Laboratories

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Cow's Milk

0.0195 gms.
Ca per oz.
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0.0059 gms.
Cs in one
oz. **FARINA**

MEAD'S CEREAL IS RICH IN CALCIUM

Figures show gms. calcium per ounce of cow's milk, farina, rolled oats and Mead's Cereal.

0.0068 gms.

Iron

in one oz.

MEAD'S CEREAL

0.0011 gms.
Iron
in one oz.
Rolled Oats

0.0022 gms.
Fe per oz.
FARINA

0.0006 gms. Fe
in one oz. Milk

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- (5) Maintenance of acid-base equilibrium
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- (7) Coagulation of blood
- (8) Antagonism to toxic effects of potassium and magnesium ions.

Refs: F. R. Fraser, J. C. Hoyle, etc., etc.

¹ Editorial, Storage of Calcium, J.A.M.A. 96:197 (1931). ² Sherman, H. C. and Booher, L. E., The Calcium Content of the Body in Relation to that of the Food, Proc. Soc. Exper. Biol. & Med. 28:91 (1930).

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KNOX Gelatine dishes are often specified. This is because Knox contains no ready-prepared flavoring, coloring, or sweetening. It is pure granulated gelatine. An analysis

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WESTVILLE CREAM

(Six Servings)

	Grams Prot. Fat CHO. Cal.				
1½ tablespoonfuls Knox Sparkling Gelatine	10	9
¼ cup cold water	..	..	..	..	..
1 square chocolate, grated	30	4	15	9	..
¾ cup hot water	..	..	..	..	..
¾ cup milk	180	5	7	9	..
2 eggs	100	13	10.5	..	..
¼ cup cream, whipped	60	2	18	2	..
5 tablespoonfuls sugar	40	..	..	40	..
1 teaspoonful vanilla	..	..	..	..	..
Few grains salt	..	..	..	..	..
Total	33	50.5	60	826.5	

Soak gelatine in cold water. Heat chocolate, water, milk and salt over hot water, then add gelatine and stir until dissolved. Separate eggs and beat egg yolks until lemon colored. Stir hot mixture slowly into egg yolks. Return to stove and heat over hot water until mixture thickens slightly. Remove from stove, add vanilla and chill until nearly set. Beat egg whites until stiff, fold into jelly, also whipped cream. Mold and chill until firm.

LEMON MIST

(Six Servings)

	Grams Prot. Fat CHO. Cal.				
1 tablespoonful Knox Sparkling Gelatine	7	6	..	..	..
¼ cup cold water	..	..	..	..	..
1½ cups hot water	..	..	..	..	..
Grated rind 1 lemon	..	..	..	..	..
¼ cup lemon juice	40	..	..	4	..
2 eggs	100	13	10.5	..	..
2 tablespoonfuls sugar	16	..	..	16	..
Total	19	10.5	20	250.5	

Soak gelatine in cold water. Boil rind of lemon in water used for dissolving gelatine; add sugar; pour on soaked gelatine—stir until dissolved. Pour this into well beaten egg yolks. Return to stove and cook over hot water until mixture thickens slightly, stirring constantly—add lemon juice and pinch of salt. When nearly set fold into egg whites which have been beaten stiff. Mold and chill.

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If you agree that recipes like the ones on this page will be helpful, write for our complete Recipe Book—it contains dozens of valuable recommendations for the convalescent diet. We shall be glad to mail you as many copies as you desire. Knox Gelatine Laboratories, 461 Knox Ave., Johnstown, N. Y.



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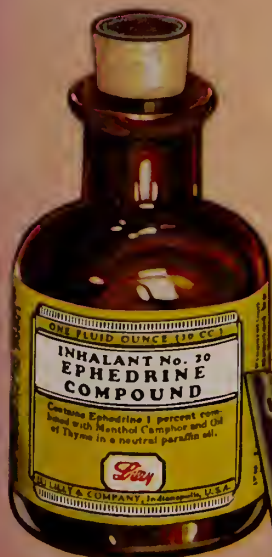
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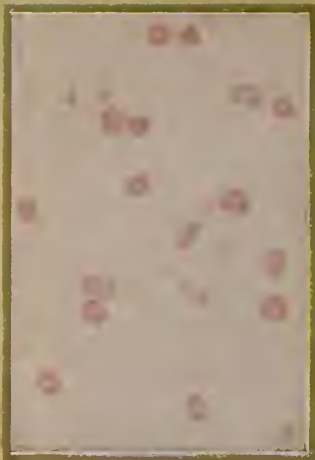
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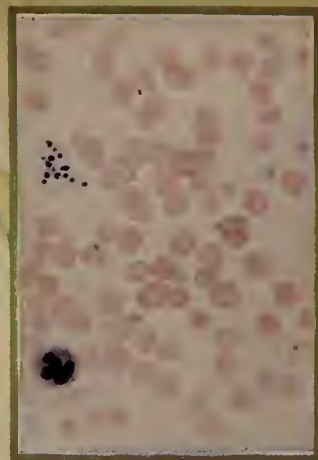
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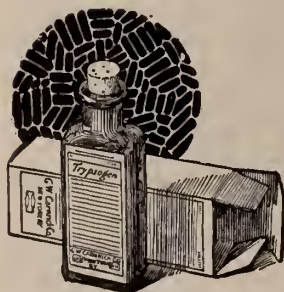


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Book Review

THE PRACTICE OF MEDICINE: By A. A. Stevens, A. M., M. D., Professor of Applied Therapeutics in the University of Pennsylvania; Visiting Physician to Philadelphia General and University Hospitals; Consulting Physician to St. Agnes' Hospital, Philadelphia. Third Edition, Entirely Reset. 1150 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1931. Cloth, \$8.00 net.

In this edition much of the text has been deleted, partly because it was no longer in accord with the best modern teaching and partly to make room for important material. Many of the sections have been almost completely rewritten, minor changes and elaborations occur on almost every page. The work has been brought strictly up-to-date.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 11, No. 4. (Mayo Clinic Number—August, 1931) Octavo of 211 pages with 74 illustrations. Per clinic year, February, 1931 to December, 1931. Paper, \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1931.

The contributors to this number are Drs. Anderson, Balfour, Bollman, Collins, Counsellar, Craig, Dixon, Down, Figi, Gray, Heimdal, Henderson, Higgins, Judd, Kernohan, Learmonth, Lillie, Lundy, Mahorner, Masson, Meyerding, Mills, Murphy, Nelson, New, Pemberton,

Priestley, Rieneits, Scott, Smith, Wagoner, Walters, Williams.

GONORRHEA IN THE MALE AND FEMALE: By Percy S. Pelouze, M. D., Associate in Urology and Assistant Genito-Urinary Surgeon at the University of Pennsylvania; Fellow of the Philadelphia College of Physicians, Philadelphia, Pa. Second Edition, Revised. 440 pages with 92 illustrations. Philadelphia and London: W. B. Saunders Company, 1931. Cloth, \$5.50 net.

In this edition a number of new chapters has been added to the book, a section upon the disease in the female has been inserted.

GENERAL BACTERIOLOGY: By Edwin O. Jordan, Ph. D., Professor of Bacteriology in the University of Chicago, and the Rush Medical College, Chicago, Ill. Tenth Edition, entirely reset. 819 pages with 200 illustrations. Philadelphia and London: W. B. Saunders Company, 1931. Cloth, \$6.00.

In this edition much material has been added thus bringing the work abreast to current knowledge on the subject. Minor changes have been made in many chapters. Re-arrangement of chapters has taken place, new figures have been substituted for old ones, and a number of entirely new figures added.

PREVENTION OF PREMATURE SENILITY. By Victor G. Vecki, M. D., Boston, Mass. The Stratford Company. 1931. Price \$1.00.

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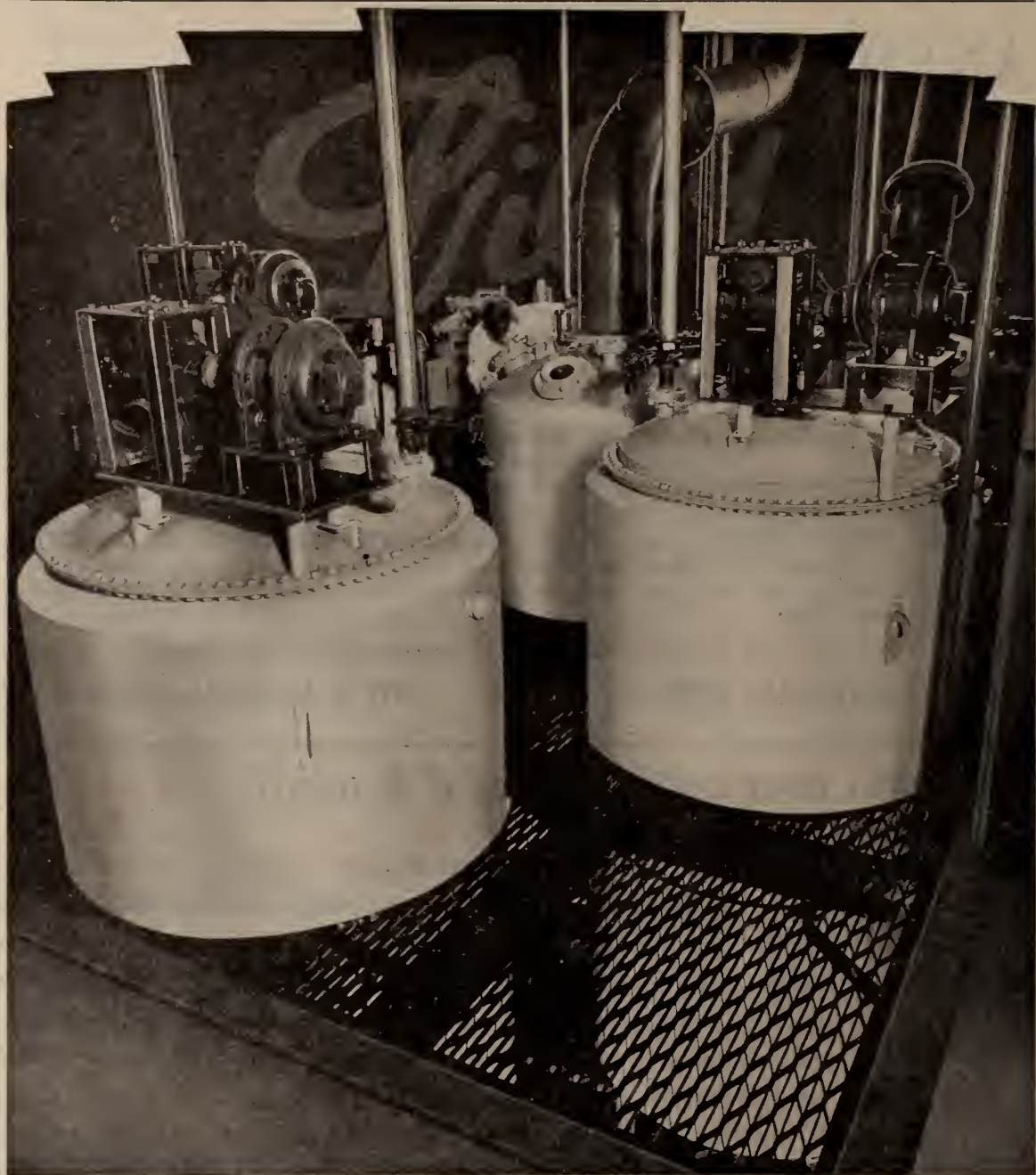
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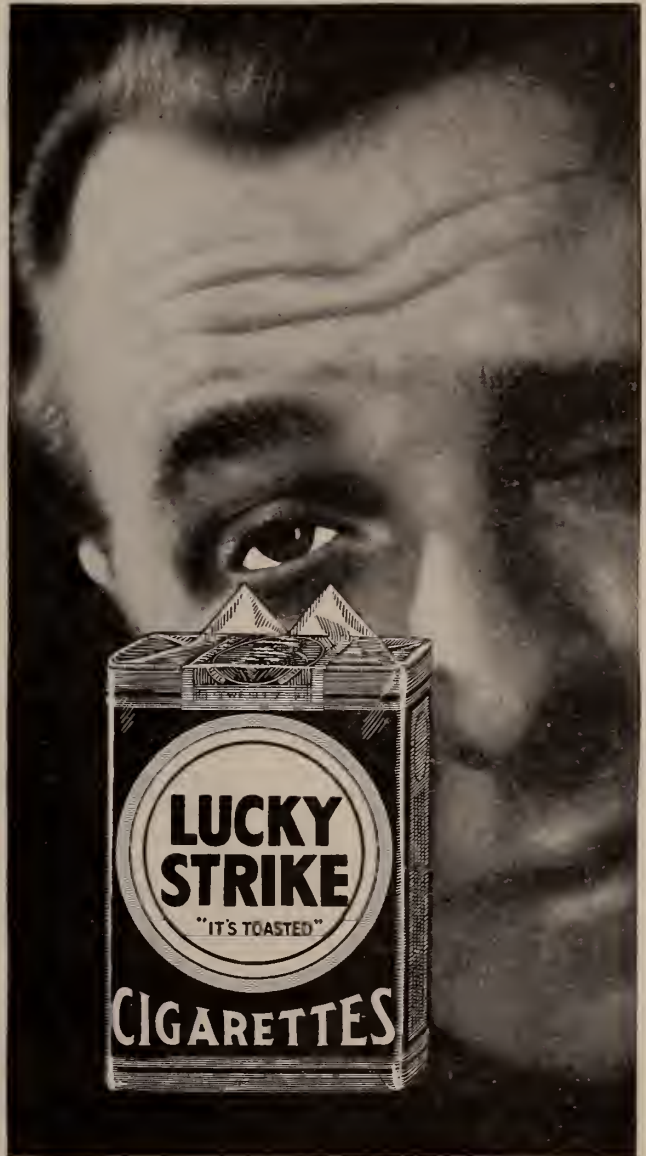
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"He is a great druggist," said one.

"He is," admitted the other. "But don't you think he makes his chicken salad a little too salty?"—*Hudson Star.*

(Continued from Page 40)

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Piatt	J. W. Blan, Monticello.....	J. M. Holmes, Monticello.
Pike	W. F. Reynolds, Barry.....	Frank N. Wells, Pittsfield.
Pope	No Society.	
Pulaski	John F. Hargan, Mound City...	B. V. Rife, Mounds.
Randolph	N. F. Robertson, Sparta.....	E. A. Pautler, Red Bird.
Richland	H. D. Fahrenbacher, Olney.....	F. L. Barthelme, Olney.
Rock Island	Wm. H. Myers, Coal Valley.....	Wm. F. Schroeder, Rock Island.
St. Clair	J. C. Beykirch, East St. Louis...	I. L. Foulon, East St. Louis.
Saline	E. W. Cummins, Harrisburg.....	W. J. Blackard, Jr., Harrisburg.
Sangamon	C. A. Frazee, Springfield.....	H. P. Macnamara, Springfield.
Schuyler	H. O. Munson, Rushville.....	W. F. Harvey, Rushville.
Scott	C. A. Evans, Bluffs.....	J. W. Eckman, Winchester.
Shelby	H. E. Monroe, Shelbyville.....	C. H. Hulick, Shelbyville.
Stark	J. C. Williamson, Toulon.....	Clyde Berfield, Toulon.
Stephenson	Sara E. Hewetson, Freeport.....	
Tazewell	Orman Brines, Morton.....	N. D. Crawford, S. Pekin.
Union	D. B. Stewart, Anna.....	W. J. Benner, Anna.
Vermillion	O. W. Michael, Muncie.....	G. T. Cass, Danville.
Wabash	E. P. Keneipp, Mt. Carmel.....	H. A. Elkins, Mt. Carmel.
Warren	Ralph Graham, Monmouth.....	Chas. P. Blair, Monmouth.
Washington	P. B. Rabenneck, Nashville.....	G. A. Green, Nashville.
Wayne	W. A. Hancock, Fairfield.....	J. T. Blakely, Fairfield.
White	F. C. Sibley, Carmi.....	John Niess, Carmi.
Whiteside	F. W. Brodrick, Sterling.....	L. S. Reavley, Sterling.
Will-Grundy	C. D. Eldred, Joliet.....	R. A. Aslvin, Joliet.
Williamson	W. R. Gardiner, Herrin.....	Harvey A. Felts, Marion.
Winnebago	J. H. Maloney, Rockford.....	F. L. Heinemeyer, Rockford.
Woodford	A. E. McReynolds, El Paso.....	S. M. Burdon, Low Point.

IRON AND COPPER IN ANEMIA

Thirty-four cases of anemia in children were treated by Milton Smith Lewis (*J. A. M. A.*), first with iron and then with iron and copper sulphate. Hemoglobin regeneration and response of red blood cells was much more striking when iron plus copper were given than with iron alone. No case of the nutritional series failed to respond to iron and copper. The first sign was an increase in appetite followed by gain in weight. Erythrocyte count rose rapidly; hemoglobin more slowly. In cases where infection was present this interfered with blood regeneration. After subsidence of infections, blood regeneration resumed its normal rate. Lewis used saccharated ferrous carbonate in amounts varying from 15 to 60 grains daily and copper sulphate 0.5 per cent solution, from one to two teaspoonfuls t.i.d. Mills (*Can. Med. Assoc. Jour.*) showed similar beneficial results in ten adults with idiopathic anemia of the hypochromic type. He used a capsule containing mass of ferrous carbonate 0.2 gm., copper sulphate 0.015 gm., and phenolphthalein 0.17 gm. Three capsules were prescribed daily.—*American Med., New York.*

SUPERHUMAN FAITH

"How did you come to raid that barber's shop?" the dry agent was asked.

"Well," he replied, "it struck me kind of funny that such a lot of fellows should buy hair restorer from a bald-headed barber."—*Boston Transcript.*

HOME TREATMENT

"Good morning, Mrs. Kelly," said the doctor, "did you take your husband's temperature, as I told you?"

"Yes, doctor, I borrowed a barometer and placed it on his chest; it said 'very dry,' so I bought him a pint o' beer an' he's gone back to work."—*Boston Transcript.*

A NEW METHOD OF KILLING POISON IVY

The New York Department of Health reprints in its *Health News* the following article describing a method of killing poison ivy, from the September 6 issue of *The Rural New Yorker*. In view of the fact that the plant is so difficult to destroy without running a risk of being seriously poisoned, this apparently effective procedure, which is both simple and cheap, seems well worth trying:

The material used is calcium chlorate, not calcium chloride or chloride of lime as some have thought. It costs, in 50-pound lots, about 11½ cents per pound. Smaller quantities are more expensive, but so little is required that the cost for the area treated is trifling.

The principle on which it works is that the chloric acid penetrates the tissues of the plant, gets into the sap and disorganizes growth.

As used dry, it is dusted on lightly, when the leaves are damp with dew or rain, so that it will not slide off. Its affinity for moisture from the air is so great that very soon the white dust disappears, and drops of moisture take its place.

As a spray, one pound is enough for from one to two gallons of water. Weaker solutions may work, but this should be tried, as plants differ in resistance at times. A forcible spray is better than a mere sprinkling.

It acts quickly. In two days the leaves will be withered, and its work goes on until the stem is shriveled and the whole plant apparently dead.—*Military Surgeon.*

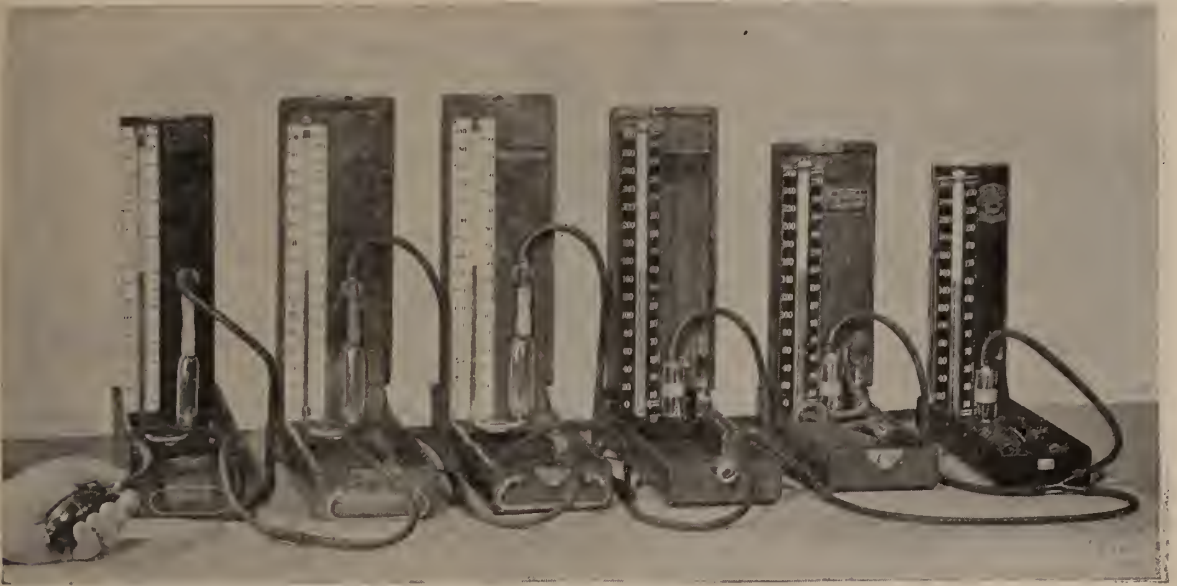
CHAMPION COW

Teacher: What cow is best known for the amount of milk it gives?

Johnny: Magnesia.

Teacher: Magnesia?

Johnny: Yessum, all the drug stores sell milk of magnesia.—*Patchwork.*



MAKE THIS SIMPLE TEST

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THE chief function of a blood pressure instrument is to indicate accurately the exact pressure in the arm band. If it does not do this, it is, of course, impossible to obtain accurate systolic or diastolic pressures.

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THE TEST

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product in this form.

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staff in co-operation with the Simpson
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igan . . . Accepted by the Council on
Pharmacy and Chemistry of the A.M.A.

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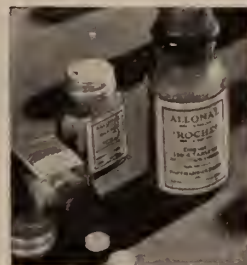
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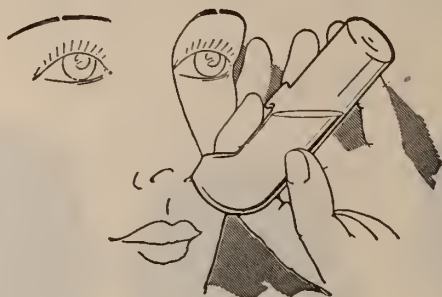
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Book Reviews

THE MEDICAL CLINICS OF NORTH AMERICA, (Issued serially, one number every other month.) Volume 15, No. 2. (Philadelphia Number—September, 1931) Octavo of 303 pages with 37 illustrations. For Clinic year July, 1931, to May, 1932. Paper \$12.00; Cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1931.

The contributors to this number are Drs. Appel, Arnett, Baumann, Blumberg, Boles, Burge, Cantarow, Clark, J. A. Clark, Jr., Collins, Jr., Cooper, Cottrell, Doane, Easby, Fox, Gilpin, Goldburgh, Griffith, Harris, Jacobs, Jump, Keeler, Kern, Klinck, Jr., Leopold, Miller, Mohler, Pepper, Schloss, Schnabel, Shay, Small, Steinfeld, Stewart, Stokes, Talley, Weiner and Weiss.

SURGICAL PATHOLOGY OF THE DISEASES OF BONES.

By Arthur E. Hertzler, M. D., with 211 illustrations. Philadelphia, Montreal and London: J. B. Lippincott Company, 1931.

This is the only work which treats in a comprehensive manner the pathology of diseases of bones. That there is need for such a book is very apparent.

This book is the result of some thirty years of medical teachings and represents the author's experience and is written almost entirely from the author's own experience with patients that have come under his own personal observation.

PHYSICIANS MANUAL OF BIRTH CONTROL. By Antonette F. Konikow, M. D. New York: Buchholz Publishing Company, 1931. Price, \$4.00.

TABLES OF FOOD VALUES. By Alice V. Bradley, B. S.. Peoria, Illinois. The Manual Arts Press, 1931. Price, \$2.00.

This work should be a real contribution in the nutrition field and of great assistance to the physician and the dietitian and nutrition worker.

THE SURGICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 11, No. 5. (Pacific Coast Surgical Association Number—October, 1931.) 279 pages with 109 illustrations. Per Clinic year (February, 1931 to December, 1931.) Paper, \$12.00; cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1931.

Are from the clinics of Drs. Brown, Herald Brunn and Franklin I. Harris, Berger and Osborne, Collins, Else, Everingham, Fairchild, Gilcreest & Mullen, Helper, Hinman, Holden, Holman & Shen, Jones, Jr., Kahn, Kilgore & Taussig, Lamson, Lockwood, Mason & Baker, Mathews, Phillips, Richert, Robinson, Rocky, Scholl, Sturgeon, Sturgeon & Ware, Swift & Flothow, Taylor, Weeks & Delprat and Willis.

SURGICAL PATHOLOGY OF THE SKIN, FASCIA, MUSCLES, TENDONS, BLOOD AND LYMPH VESSELS. By Arthur E. Hertzler, M. D. 260 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1931. Price, \$5.00.

In this work the author presents results of observa-

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tions in the clinic, or operating room with only incidental discussions of the findings of the laboratory. The work is concise, up-to-date and will prove a valuable addition to the doctor's library.

GYNECOLOGY & UROLOGY FOR NURSES. By Samuel S. Rosenfeld, M. D., New York. Wm. Wood & Co., 1931. Price, \$2.00.

THE NURSES MEDICAL LEXICON. By Thomas Lathrop Stedman, M. D. New York: Williams Wood & Company, 1931. Price, \$2.00 net.

This book is intended for the use of graduate and student nurses, of pre-medical and dental students, and of the general public.

INFECTIONS OF THE KIDNEY. By Meredith F. Campbell, M. D. New York & London: Harper & Brothers, 1931. Price, \$3.00.

This work should prove to be a valuable aid to the diagnosis and treatment of a group of conditions in which diagnosis and treatment are usually difficult, and should be invaluable not only to the practitioner but most helpful to the specialist in this field.

ON THE EDGE OF THE PRIMEVAL FOREST. By Albert Schweitzer, M. D. Containing 16 illustrations from photographs, and a sketch map. New York: The Macmillan Company, 1931. Price, \$2.00.

This work portrays the experiences and observation of a doctor in equatorial Africa.

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3 TRI-CALSATE, the neutral gastric antacid, guards against the possibility of an alkalosis, for the end

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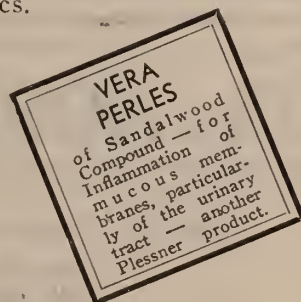
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(Continued on Page 38)

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Constant medical attention. Occupational therapy.

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(Continued from Page 36)

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DANGEROUS DAN McCROBE

(Apologies to Robert W. Service)

A bunch of germs were hitting it up
In the Bronchial saloon;
Two bugs on the edge of the larynx
Were jazzing a ragtime tune.
Back of the teeth, in a solo game,
Sat dangerous Ack-Kerchoo.
And watching his pulse was his light of love,
The lady that's known as Flu.

—Wall Street Journal.

When a man past thirty begins to get soused at intervals, without apparent reason, you can bet he is doing it to forget that he has a wife—or to spite her.

—Fountain Inn Tribune.

APPLIED PSYCHOLOGY

The economically-minded gentleman was pained to find his wife depressed. He inquired anxiously as to what was wrong.

"You don't love me any more; I know it; I feel it," she sobbed.

"But pet," he insisted, "I assure you that I do—I adore you."

"No, no, no," she sobbed. "No man could love a woman with such old clothes as I have."

WHEN JUSTICE WINKS

The magistrate bent stern brows on the defendant.

"You are charged with exceeding the speed limit last night," he declaimed. "Are you guilty or not guilty?"

"Well you can decide for yourself, Judge," replied the prisoner. "I was in that car you passed just before they pinched me."—American Legion Monthly.

DEFINITION OF A SPECIALIST

"A specialist is a man who knows more and more about less and less."—Dr. Wm. J. Mayo.

SELF-CRITICISM

Self-criticism is the most valuable habit that can be acquired by a worker in any scientific field. A healthy skepticism is inseparable from the scientific viewpoint. It produces its best results when turned against its possessor as well as the external world.

The ability to criticize one's work impersonally is of special importance in a profession like medicine, which has not yet arrived at the status of an exact science. Here an error in judgment may prove disastrous, and the doctor must be trained to analyze his fatalities with unsparing harshness to determine whether any fault of ratiocination or technic has contributed to the untoward outcome.—New York Medical Week.

IT HURTS

Apropos of economically-minded folks, they are telling of a story of a recent Community Chest drive during which a young lady approached a sombre looking man and asked for a subscription adding, with a smile, "You know, you should give until it hurts."

He looked at the application card which she had given him and then handed it back but without a contribution.

"Lady," he said, gravely, "I don't need to give—the very idea hurts!"

GIVE HIM HIS DIPLOMA

Medical Professor: "What would you do in the case of a person eating poisonous mushrooms?"

Student: "Recommend a change of diet."—Watchman-Examiner.

SO WHY WORRY?

A boy was about to purchase a seat for a cinema in the afternoon. The box-office man asked:

"Why aren't you at school?"

"Oh, it's all right, sir," said the youngster, earnestly, "I've got measles."—Outspan.



Christmas Morning...

In what better way could you express to a doctor friend your good wishes and appreciation than by presenting him with a Lifetime Baumanometer at Christmas time?

And what doctor wouldn't be overjoyed to receive such a personal and enduring gift, individually engraved with his name—one that he will use day in and day out for many years to come?

Obtainable now in special Gift package from all surgical instrument dealers



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To allay the headache, backache and general soreness associated with coryza, bronchitis, pharyngitis, tonsillitis and influenza, many physicians depend upon Pyramidon.

Experience has demonstrated that Pyramidon affords prompt relief without depressing the heart and respiration. By reducing the fever, it also makes the patient more comfortable. Its effect usually extends over many hours.

DOSE: For adults, 5 grains, repeated when pain recurs.

Pyramidon is supplied in tablets of 5 grains (tubes of 10 and bottles of 100).

Sample and literature on request

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THE BOY WHO FOUND RAINBOWS IN COAL-TAR

ONE Easter vacation in 1856, 17-year-old William Henry Perkin, a student-assistant in the Royal College of Chemistry, was toiling in an improvised laboratory under the eaves of his English home.

"Throw the rubbish away!" croaked unimaginative Common Sense, when the boy poured in a red fluid and got a dirty, sticky, dark mass at the bottom of his test tube. "Examine it!" whispered Science. "It may be worth something!"

Science was right. Out of that ugly dark mud came a lovely violet-purple dye. This "Mauve" was the first aniline dye ever made from coal-tar.

But young Perkin did more than found an industry. His experiments, and the experiments of other men in those early days, showed the way to a new, *creative* chemistry.

Men began to *build* with atoms.

THE HOUSE OF RESEARCH

PARKE-DAVIS research chemists often spend years in producing a single synthetic chemical compound. For example, in a recent search for a synthetic drug to accomplish a certain purpose, hundreds of compounds were patiently built up. Each in turn was put to the severest tests. Finally *one* was obtained that met our exacting requirements.

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Puretest Cod Liver Oil has a Vitamin A content of not less than 50,000 U.S.P. units in each 100 grams.

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Puretest Cod Liver Oil comes from the chosen waters of Lofoten, Norway, North of the Arctic Circle. The cod are caught during the early part of the year when the livers are richest in Vitamins.

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But you ask one thing more of the cod liver oil you specify. A reasonable price. For the average patient does not feel like paying a high price for such a well-known, long-used product. And he does not need to.

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Chair No. 633

Seat height 27½ in. to 36 in. Headrest unusually flexible. Back rigid in any position. Legrests sliding or tilting in any position. Arms raise, lower or may be removed. Drain pan nickel silver. Drain pipe to catch basin. Side bracket sockets either side for irrigation, lamp or instrument. Many other features.

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is invariably selected instead of the older and more highly toxic hypnotics—barbital and phenobarbital

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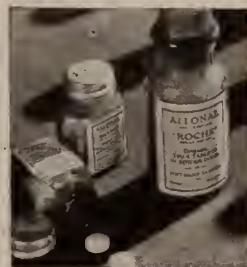
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than either
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**SAFE
NON-NARCOTIC**
Issued in vials of 12 and 50 oral tablets



A complimentary trial supply sent to physicians on request

HOFFMANN-LA ROCHE, INC. NUTLEY, NEW JERSEY

"Loose Talk"

There has been much commendable criticism, of late, in professional publications and elsewhere, of "loose talk" by physicians and dentists as a principal cause of the marked increase in malpractice litigation — particularly where the "mass-selling" plan of professional protection has been called to account.

The emphasis placed on the dangers of "professional" loose talk, however, serves to reveal the advantage of likewise eliminating the discussion of alleged professional errors (or malpractice claims and suits resulting from them) by large armies of insurance agents — particularly those handling multiple lines and contacting the laity as well as the professions. Loose talk is not always confined within the professional ranks.

The Medical Protective Company enjoys a unique position. It employs specially trained representatives, writing professional protection exclusively. It teaches respect for the professional ethics of its patrons. It considers its relations with its clients inviolate. It stresses the importance of keeping the insurance feature in the background — the danger of parading insurance before damage-suit lawyers and juries. It operates with noteworthy success, as a secret but powerful ally to the Doctor in trouble.

Recent developments in the general malpractice situation serve to emphasize the advantages to the professions of supporting a Company which understands professional problems, respects professional ethics, and, withal, safeguards the professional purse.

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Complete Professional Protection

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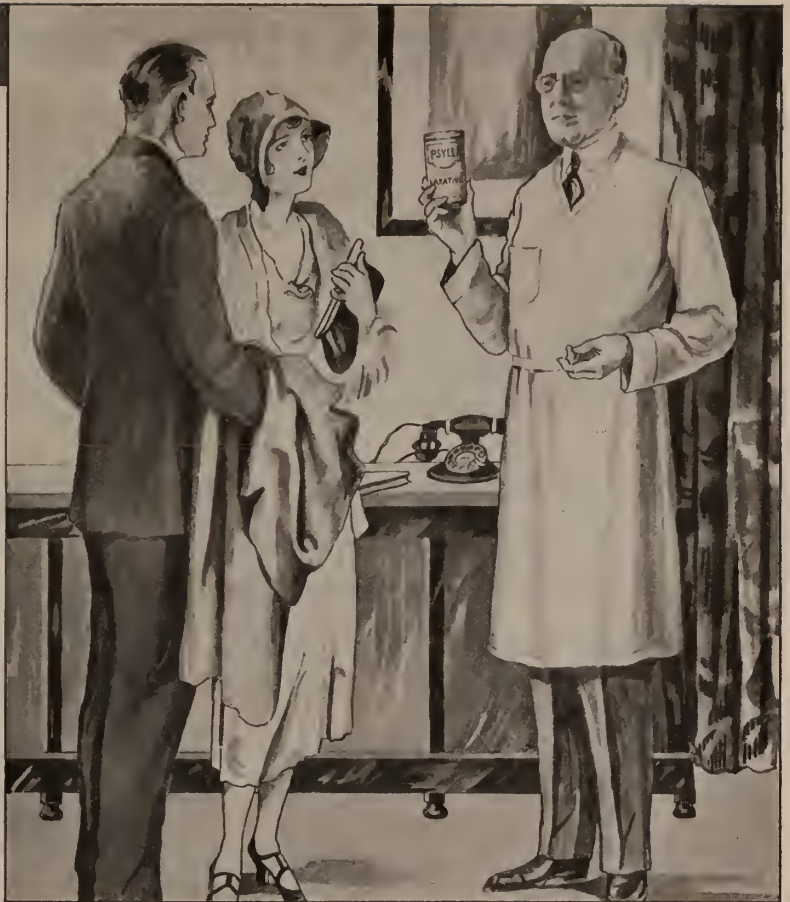
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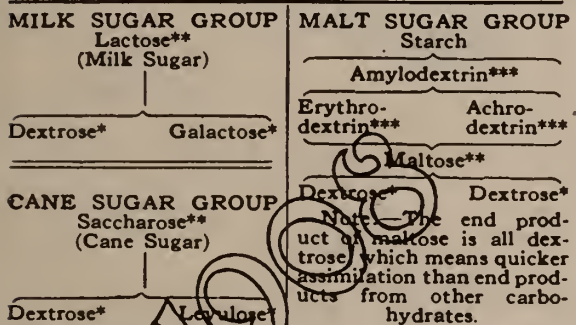
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Relative Values of Carbohydrates

New Findings Confirm Old Truths

Recent scientific investigations in rats (tabulated at the right) are in accord with many years of clinical observations on babies, as shown by the following excerpts from authoritative medical literature reflecting the consensus of three decades of pediatric experience.

CHART OF CARBOHYDRATE HYDROLYSIS*



*Monosaccharide **Disaccharide ***Polysaccharide
Of the monosaccharides, dextrose, the end product of maltose, is converted into glycogen more easily than levulose or galactose. Therefore, maltose, which splits into two molecules of dextrose, may be absorbed with much less digestive energy than either lactose or saccharose.

* Morse, J. L. & Talbot, F. B. *Boston Med. & Surg. J.*, 159:852.

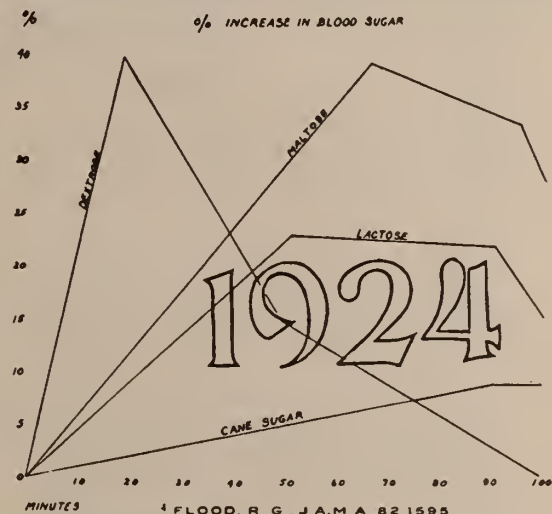
RELATIVE ASSIMILATION VALUES OF VARIOUS CARBOHYDRATES¹

	Average per 100 gms. body weight
1 MALTOSE.....	1.50
2 DEXTRIN + MALTOSE.....	1.32
3 Glucose + dextrin.....	1.32
4 Glucose + sucrose.....	1.32
5 Glucose.....	1.04
6 Sucrose + maltose.....	0.98
7 Fructose + glucose.....	0.98
8 Sucrose + dextrin.....	0.76
9 Sucrose.....	0.76
10 Fructose.....	0.5
11 Glucose + lactose.....	0.26
12 Lactose.....	0.16
13 Galactose.....	0.1

These authors have also stated: "Maltose, fructose, glucose, starch and dextrin lead in nutritive value, followed by galactose, mannose, arabinose, xylose, lactose, sucrose and glycogen."²

¹ H. Ariyama and K. Takahasi: *Biochem. Z.*, 216:269 (1929) and ² *J. Agr. Chem. Soc., Japan* 5; 674 (1929).

RATE OF SUGAR ABSORPTION IN NEWBORN⁴



⁴ FLOOD, R. G., *J. A. M. A.* 82:1595

MALTOSE OR LACTOSE IN INFANT FEEDING⁵

Answer—The superiority of one form of carbohydrate over another in artificial feeding of infants has been much discussed during recent years. It is generally accepted that cow's milk without modification is not a satisfactory infant food. So far as the carbohydrate is concerned, about one-fifth to one-eighth ounce per pound of infant's body weight is required daily. To supply this amount it is necessary to add carbohydrates in some form. Admitting that lactose is the sugar supplied in human milk, it does not follow that it is the sugar best tolerated in another medium, such as cow's milk. It is generally believed that lactose is more laxative than sucrose—that it must be fed with a certain amount of caution, as fermentative upsets are likely to follow if amounts approximating that found in human milk are fed. There is cause for disagreement among clinicians, as it is important to consider the other food elements; i.e., the amounts of fat and protein fed as well as the medium in which they are fed. For example, when lactic acid milk is used, more added carbohydrate seems to be tolerated than when sweet milk mixtures are fed. Sucrose has the advantage of being much cheaper and is always available. Evidence has not been presented that it should

not be used in infant feeding. With its general use in large infant welfare clinics where supervision is a matter of routine, there is less to be said against it as far as clinical results are concerned. The complaint that it is too sweet is not often encountered when the usual amounts are fed. The dextrin-maltose preparations possess certain advantages. When they are added to cow's milk mixtures, we have a combination of three forms of carbohydrates, lactose, dextrin and maltose, all having different reactions in the intestinal tract and different absorption rates. Because of the relatively slower conversion of dextrins to maltose and then to dextrose, fermentative processes are less likely to develop. Those preparations containing relatively more maltose are more laxative than those containing a higher percentage of dextrin (unless alkali salts such as potassium salts are added). It is common experience clinically that larger amounts of dextrin-maltose preparations may be fed as compared with the simple sugars. Obviously, when there is a lessened sugar tolerance such as occurs in many digestive disturbances, dextrin-maltose compounds may be used to advantage. ⁵ *Queries and Minor Notes, J. A. M. A.*, 88:266.

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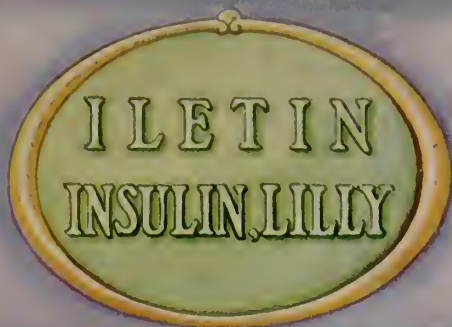
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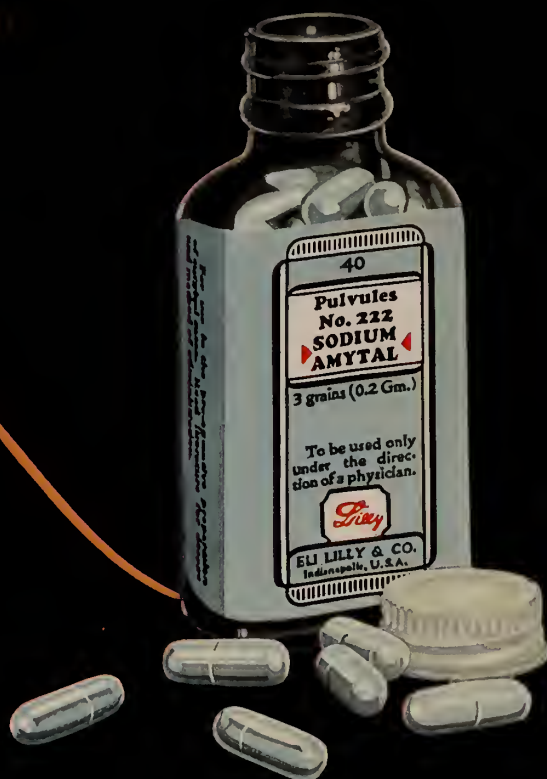
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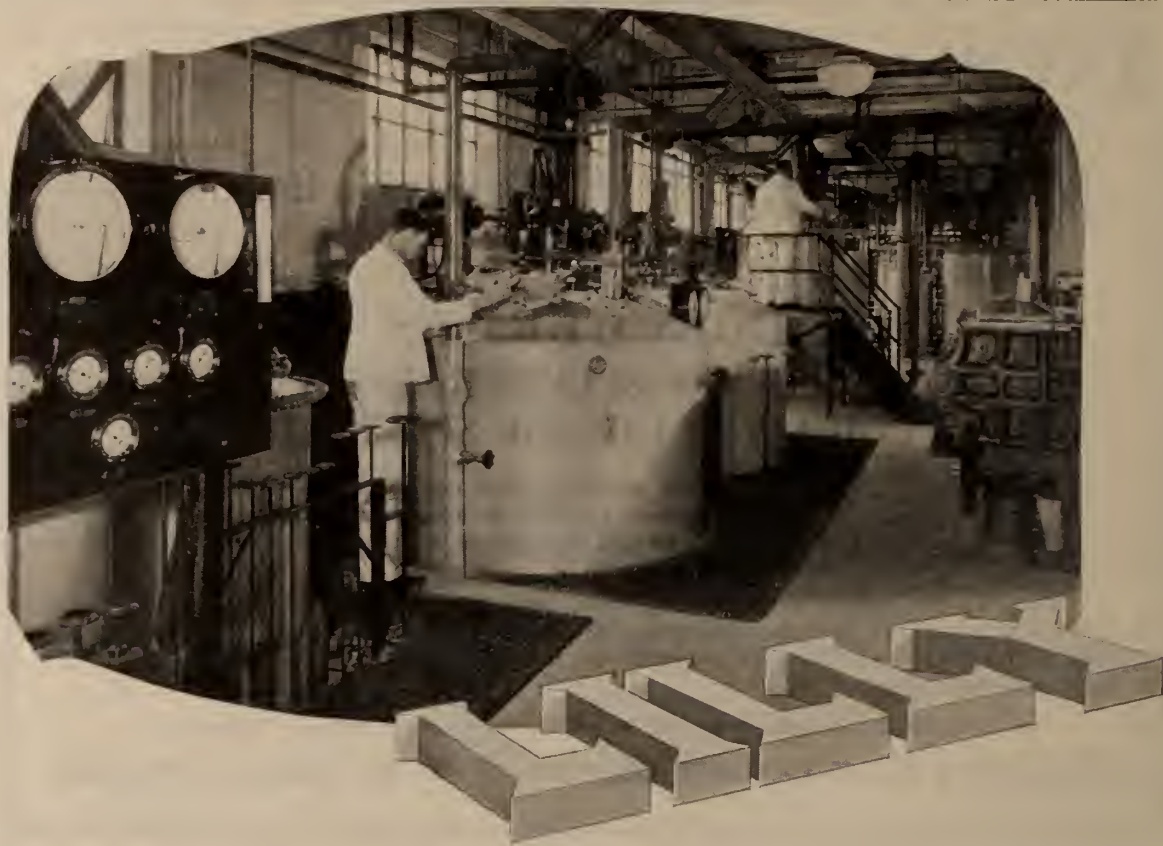
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Sometimes, perhaps, medical men seem slow to grasp the new, but that is simply because they want to be sure of their ground. They must be convinced by facts of the superiority of one treatment over another before making a change, which of course, is as it should be. Once convinced, however, they waste no time in making the switch.

Internists, today, are rapidly switching from the old method (alkaline antacids) in treating peptic ulcers, heartburn, hyperacidity and the like to the new method (neutral antacids, as represented by granular effervescent TRI-CALSATE) because of these facts:

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2 TRI-CALSATE, the neutral gastric antacid, does not irritate the bowel or kidney. Alkaline antacids, on the contrary, are irritating to the urinary and gastrointestinal tracts.

3 TRI-CALSATE, the neutral gastric antacid, guards against the possibility of an alkalosis, for the end

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4 TRI-CALSATE, the neutral gastric antacid, offers positive relief by neutralizing the excess HCL of the gastric content without stimulating gastric secretion. Alkaline antacids, however, afford but temporary relief, for after the process of neutralization has taken place a decided increase in acid secretion always follows.

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Book Review

THE MEDICAL CLINICS OF NORTH AMERICA. (Issued serially, one number every other month.) Volume 15, No. 2. (Chicago Number—November, 1931.) Octavo of 227 pages with 53 illustrations. Per clinic year, July, 1931, to May, 1932. Paper, \$12.00; cloth, \$16.00 net. Philadelphia and London: W. B. Saunders Company, 1931.

Contributors to this number are Drs. Abt, Berghoff, Birch, Carr, Elliott, Finnerud, Foley, Keaton, Maher, McMullen, Meyer, Pilot, Portis, Streicher, Williamson and Young.

INTRODUCTION TO THE LITERATURE OF VERTEBRATE ZOOLOGY. Compiled and edited by Casey A. Wood, M. D. London: Humphrey Milford. Oxford University Press. 1931. Price \$15.00 or Three Guineas.

This work is divided into three main sections. The first consists of introductory matter which furnishes a brief account of the literature of Vertebrate Zoology from the earliest times to the present—from the writings of ancient and medieval zoologists, Aristotle, Pliny the Second, Dioscorides, Averroës, et al., to the more important treatises and monographs on ornithology, mammalogy, ichthyology, herpetology, and amphibiology of the twentieth century. Included are general treatises and numerous periodicals and serials, monographs on

vertebrate palæontology, zoogeography, ecology, psychology, bionomics, experimental zoology, etc., likely to interest the advanced student and the librarian.

Brief descriptions are also given of Natural History Societies, Museums, and Zoological Stations throughout the world; travelogues of naturalists; drawing of animal painters and illustrators, more than 5,000 originals of which are in the McGill libraries.

Physicians and medical libraries will find the work useful. As is well known, not only were the majority of ancient and medieval writers on natural history physicians, but many modern treatises on comparative and systematic zoology are the products of medical men.

THE MUNICIPAL DOCTOR SYSTEM IN RURAL SASKATCHEWAN. By C. Rufus Rorem, Ph.D. Chicago. University of Chicago Press. 1931. Price \$1.00.

This is number 2 of the publications of the committee on the cost of medical care.

A SURVEY OF THE MEDICAL FACILITIES OF THE CITY OF PHILADELPHIA. By Nathan Sinai and Alden B. Mills. Chicago. University of Chicago Press. Price \$1.50.

This is number 9 of the publications of the committee on the cost of medical care.

WHAT THE PUBLIC SHOULD KNOW ABOUT CHILDBIRTH.

By Walker Bourne Gossett, M. D. Minneapolis. The Midwest Company. 1931. Price \$2.00.

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This list is corrected in accordance with the best information obtainable at the date of going to press. County Secretaries are requested to notify The Journal of any changes or errors.

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Clay	C. Henderson, Clay City.	John Shore, Sailor Springs.
Clinton	W. S. DuComb, Carlyle.	W. O. Warren, Carlyle.
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Cook	John R. Harger, Chicago.	Charles H. Phifer, Chicago.
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De Witt	W. B. Sharkey, Clinton.	Wm. R. Marshall, Clinton.
Douglas	W. C. Blaine, Tuscola.	Philip Herrin, Villa Grove.
Du Page	J. H. Raach, Wheaton.	A. R. Rikli, Naperville.
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Edwards	J. L. McCormick, Bone Gap.	H. L. Schaefer, West Salem.
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Fayette	A. R. Whitefort, St. Elmo.	G. A. Stanberry, Vandalia.
Ford	S. M. McLaughlin, Paxton.	I. D. Kelsheimer, Paxton.
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Fulton	E. E. Davis, Avon.	C. D. Snively, Ipava.
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Greene	Wm. Garrison, White Hall.	O. L. Edwards, Roodhouse.
Hancock	R. F. Sheets, Carthage.	W. P. Frazier, Carthage.
Hardin	No Society.	F. Buckmaster, Effingham.
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Henry	H. N. Hefflin, Kewanee.	P. J. McDermott, Kewanee.
Iroquois	R. D. Short, Watseka.	C. H. Dowsett, Watseka.
Jackson	H. G. Horstman, Murphysboro.	Edward K. Ellis, Murphysboro.
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Jersey	H. R. Bohannon, Jerseyville.	B. M. Brewster, Fieldon.
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(Continued on Page 38)

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Pope	No Society.	
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RECENT FACTS ON TRANSMISSION OF TUBERCULOSIS

J. Arthur Myers, Minneapolis (*Journal A. M. A.*, Aug. 1, 1931), deprecates the fact that students of medicine and nursing are being left with the impression that it is a good thing to come in contact with patients suffering from tuberculosis and receive just the right dose to give them a positive tuberculin reaction. Under such conditions the dosage is entirely uncontrolled. The number of bacilla which the student's body receives from contact with tuberculous patients may vary from a few to huge numbers. Where careful observations have been made in this country, it has been shown that approximately 30 per cent. of the probationers in schools of nursing react positively to the tuberculin test but, after they have taken tuberculosis services from 80 to 100 per cent. have been found to react positively. Since a positive reaction indicates an allergic state and since there is reason to believe that the destructive phase of tuberculosis is brought about by the allergic reaction, it would seem obvious that nothing but harm has been done by allowing students to take unmeasured doses of tubercle bacilli into their bodies and develop a state of allergy. But what immediate evidence is there that allergy is dangerous to the students? The best evidence is that from 5 to 12 per cent. of student nurses have presented themselves with tuberculous disease that required treatment soon after allergy was manifested by a positive tuberculin reaction. Pleurisy with effusion is looked on as one of the early manifestations of tuberculosis. In itself, it is an allergic reaction. Many patients are desperately ill from it over a considerable period of time. Abundant clinical experience has taught that pleurisy with effusion is frequently followed by pulmonary tuberculosis of the destructive type. Therefore, in the light of such evidence, who will dare state that an allergic reaction, as manifested by the tuberculin test and brought about by exposure to human beings suffering from tuberculosis, is of benefit to a

student? The author desires to leave the answer to the reader and to the students themselves as to whether exposure of students to tuberculous patients should be allowed to continue or whether it should be prevented by the adoption of an adequate contagious technic.

SUCCESS IN PUBLIC HEALTH RESEARCH

Fred O. Tonnev, Chicago (*Journal A. M. A.*, Sept. 5, 1931), discusses the question of how the ordinary routine public health laboratory may successfully enter the field of research under the too common handicap of inadequate facilities, pressure of routine work and, perhaps, lack of official administrative foresight and sympathetic support. He believes that the essentials to success in this venture that should be given emphasis are: (1) cultivation of the research point of view; (2) treatment of the staff; (3) treatment of the problems; (4) provisions of scientific contracts, and (5) methods of securing publication. The growing health needs of a great community give rise to many demands for practical research in problems concerning public health and in Chicago only a few such demands can be met with the facilities now provided by the municipality. Yet enough has been accomplished to show by specific example the urgent need and ultimate economy of adequate or even liberal provision for research in public health by the community itself. Surely the time is ripe for the establishment of a public health research laboratory commensurate with the needs of the metropolitan area; a complete and fully equipped modern laboratory, housed in a specially designed building of ample capacity, situated in a central location, equally accessible to all sections of the city, to the business district, and to the administrative offices; a laboratory planned not only for immediate needs but for the emergencies of the future, and manned with an adequate staff of trained investigators working consistently for better health conditions.

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